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THE

ILLUSTRATED BOTANY.

EDITED BY

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COMPRISING THE MOST VALUABLE NATIVE AND EXOTIC PLANTS, WITH THEIR HISTORY, MEDICINAL PROPERTIES, ETC.

TO WHICH IS ADDED

AN INTRODUCTION

ON PHYSIOLOGY, AND A VIEW OF THE NATURAL AND LINNÆAN SYSTEMS.



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PREFACE.

PLANTS have not wanted observers since the time the Greeks considered them possessed of souls and endowed with powers of thought. Pythagoras was the first who drew up a regular catalogue, which for many ages was copied and modelled by his successors. In proportion as the number of known plants increased, so did the classifiers, whose labors, if they did nothing else, were useful in directing the attention to the subject. During the so-called dark ages, many an item of valuable information was collected and preserved, which was afterwards of great service. Even the superstitions of the early times served but the more to make their acquaintance general. Who did not watch to see the blossoming of the Winter Hellebore, to discover the exact time of the conversion of St. Paul ; or failed to recognize in the Crown-imperial, the royal flower given by nature to celebrate the anniversary of the day of pious King Edward, the Saxon saint ? And even as the Bluebells hung out their cerulean signals, the emblem of the ocean, on the day of St. George, in the fields of merry England, did its islands recognize anew the assurance of Britannia that she still ruled the waves.

The first powerful impetus given to Botany, was during the supremacy of the Eastern Califfs. Haroun Al Raschid, the theme alike of history and song, the hero of the "Arabian Nights," was exceedingly partial to this branch of Natural History, and spared no pains or expense to make it as perfect as possible ; far surpassing in this respect, as in many others, his cotemporary and friend, the Emperor Charlemagne.

This knowledge was wonderfully increased by the Crusades, which followed some time afterwards ; from this period native and foreign plants were regularly preserved and exchanged, and we date the commencement of Herbariums. An immense mass of information was now ready to serve as a foundation for generalization. Bacon sent forth the inductive sys-

tem; and botanists began to form various plans of classification. The dawn gradually brightened, until, with the advent of Linnæus, the sun arose above the horizon, darkness and obscurity vanished, and Botany became a science. This prince of Naturalists, who, like Sir Walter Scott, was not remarkable for any proofs of genius when young, turned, to use Dr. Smith's language, "by his magic pen, the wilds of Lapland into fairy fields, and the animals of Sweden came to be classed by him, as they went to Adam, in the garden of Eden, to receive each his particular name." Jussieu follows in the next rank, and would probably have taken the first, had not the Northern Light preceded him. America has not been behind-hand in her contributions to this science, and time would fail us to tell of Purshe, Nuttall, Torrey, Eaton, Gray, Paine, &c., many of whom are now laboring in the field. And we contribute our mite in the same cause, by making the labors of others known.

During the progress of the work, we purpose to take up the most valuable plants, either for use or ornament, of our own and other countries. Together with the information we possess, we shall consult the standard works on Chemistry, Botany, and Medicine, combining every useful item of knowledge; and without lessening its value, present it in a concise and pleasing form. The properties of each, more especially the medicinal, will be confirmed, in a number of instances, by personal experience. To this will be added its history, its meaning as an emblem in the language of flowers; and poetry, either original or selected, from the gems of the children of song. It is designed to be eminently popular in its application, and we think there is enough of that which is stranger than fiction about it, to render it in no ordinary degree interesting and instructive.

INTRODUCTION.

Physiology.

LINNÆAN AND NATURAL SYSTEMS

FLOWERS have always been held in high estimation by that part of creation which they symbolize—the gentle sex. To appreciate them, the mind must be raised in a measure above the ordinary cares of life, and more especially above its meanness and pollution. It was remarked of the poet Burns, and may be said of any botanist, that he could see more beauty in the thistle that grew at his door, than another might view in the most gorgeous spectacle on earth. To give this power of finer perception will be our object, sure that all who possess it cannot rest with it alone, but will soon look from nature up to nature's God, viewing her as the agent she sings herself in the German song—

'Tis thus at the roaring loom of time I ply,
And weave for God the garment, thou viewest him by.

The truly useful is always the truly beautiful; and we find this truth carried out in the products of the vegetable kingdom, which if eaten in their season, will, as a general rule, prevent disease; and many times after disease really occurs, prove instruments of cure. About two years ago, we had a patient under our charge who was suffering from a severe diarrhoea; and for whom all medicinal remedies were not only useless, but positively injurious. At last we thought of trying peaches, which were then ripe, and uncommonly fine. After eating about a dozen, he became speedily and perfectly cured. We took the hint from nature, and since then our practice in such cases has been eminently successful. We believe the time will come when a remedy will be found for every disease, and that perhaps even in the environs of our city an antidote grows to arrest the progress of the destroyer, Consumption. And as the period draws nigh in which there shall be no more sickness,

it will become the business of all to discover the uses of plants. In this light, a popular Botany is a Harbinger of the Millenium.

The greater part of our botanical names are derived from the Greek, that language being from its structure an exceedingly convenient one for the composition of technical terms. Botany is derived from a word signifying a herb or grass, itself derived from another word, meaning to feed, because grass is the chief food of the animals most useful to man.

Suppose our readers were transported to a vast prairie, and the 100,000 known species of plants placed before them, and they were required to range them in class, order, &c., how would they begin? The two great natural divisions of the flowering and flowerless would be the first thing observed. An intermediate division, which no doubt only existed to fill up the chasm, is now wanting; in all probability it is gradually consuming in our houses in the form of coal.

The next point would be to take a perfect flower, and after analyzing it, find wherein the several parts differed from others, so as to form a ground of generalization. We will take the flower of Juno, the Lily, as it stands near us, for example (see plate). The large and beautifully colored leaves, of which there are six, form the corolla or crown, that part commonly called the blossom. Within the corolla are six thread-like organs, with caps, called stamens; you can see them in fig. 2, marked *a*; in fig. 4, the thread *a*, from the Latin word *filum*, is called a filament; *b* is the anther or pollen box. The pistil is the long organ in the centre, towering above the others; at fig. 3 it is divided into three parts, the germ, *a*, the style, *b*, and stigma, *c*, which is three-lobed. The end of the stem where the flowers are inserted, is called the receptacle. There is yet another part which is wanting here, the calyx or flower cup; you can see it, however, in the other plates.

If we watch the flower carefully we would find, after a certain time, that the stamen would approach the pistil. A good comparison has been made of the male stamina, with their gaily painted hats, bowing round the female pistil as beaux about their belle. Each in turn, to carry out the simile, is permitted to come in contact with the fair; and as the contact takes place, the golden pollen is shaken upon the pistil; and the stamen retires to give place to the next, that offers the same homage. When

the atom of pollen touches the stigma, it sends out from itself a long tube, a prolongation of its inner lining, carrying the fertilizing fluid; this pierces the stigma, and gliding through the style, deposits its fluid on the germ.

Upon this a new and strange series of actions take place; the germ increases in size, and undergoes a change of texture; it is now the seed-vessel; and this vessel and the seeds it encloses, in botanical language, is called fruit, which we must remember is nothing more than the matured pistil. In fig. 5 we see the mature capsule; *a*, the threads that guard the opening of the valves. Fig. 6, the capsule cut across, exhibiting its internal division into three cells, with three valves; *a*, the cells or chambers; *bb*, the triangular flat seeds disposed in a double row in each cell.

As the germ of the fruit receives the pistil, and it is by it nourished and brought to perfection, it bears the name of wife (*Gynia*). The stamens are called husbands (*Andria*). Linnaeus founded his arrangement on these organs, and his plan has consequently received the name of the sexual system. For a beginner in this science it is incomparably the best, and of course the one we shall pursue. His classes and orders are entirely founded upon the number, situation, and connection of the stamens and pistils. The first eleven comprise all plants with perfect flowers and a sure number of unconnected stamens and pistils. Thus the lily, having six stamens, belongs to the class Hexandria (six husbands); its one pistil places it in the order Monogynia (one wife). The pink has ten stamens and two pistils; it is consequently in the class Decandria (ten husbands), and order Digynia (two wives). The eleven Husband class, Dodecandria, includes all the husbands from 11 to 20.

The 12 husband class, 20 or more stamens affixed to the calyx.

- " 13 many " " 20 " " " " " receptacle.
- " 14th class Dydynamia (two flowers), 4 stamens, 2 longer than the others.
- " 15th " Tetrodynamia (four "), 6 " 2 " " " "
- " 16th " Monadelphia (one brotherhood), filaments united in one set.
- " 17th " Diadelphia (two brotherhoods), " " " two sets.
- " 18th " Polydelphia (many brotherhoods), " " " many "
- " 19th " Syngenesia (growing together) the anthers united in a ring.
- " 20th " Gynandria. Stamens growing on the pistils.
- " 21st " Monoecia (one household), stamens and pistils on different flowers of the same plant.
- " 22d " Diœcia (two households) " " " separate plants.
- " 23d " Polygamia (many marriages) different connexions on the same plant.
- " 24th " Cryptogamia (secret marriage) no flowers, as ferns, mosses, &c.

These classes, for good reasons, have been abridged to twenty-one, but as opinion on the subject is yet divided, we thought it best to allow Linnæus to speak for himself.

The orders in the first thirteen classes depend on the number of stigmas; they are named as I have before mentioned, by prefixing the Greek numerals to the word wife. These are the only two orders in the 14th class, namely :

- 1st order, *Gymnospermia* (naked seeds), apparently naked, but real fruit.
2d " *Angiospermia* (seeds in vessels), fruit easily seen.

Also, only two orders in the 14th class, namely :

- 1st order, *Siliculosa*, fruit in a short pod.
2d " *Siliquosa*, " " " long pod.

The 19th class has six orders, namely : (The first five orders are compound flowers.)

- 1st *Polygamia Equalis* (many equal marriages), each floret has a stamen and pistil.
2d " *Superflua*. Stamina as the last; all fertile; florets of the ray only have pistils.
3d " *Frustanea*. Florets of the disk perfect; wanting or abortive in the ray.
4th " *Necessaria*. Florets of the disk have efficient stamens; of the ray efficient pistils.
5th " *Segregata*. Each floret has its own calyx, in addition to the common one.
6th *Monogamia* (one marriage). Solitary flowers have united anthers, as the *Lobelia*.

The orders of the classes from the 16th to the 23d, except the 19th which we have just mentioned, depend on the number of stamens, as *Monandria*, *Decandria*, &c. The 23d class has three orders, founded on the characters of the two preceding classes, namely :

- 1st order, *Monococcia*, separated, and perfect flowers on the same plant.
2d " *Diceccia*, " " " " " two plants.
3d " *Triœccia*, one plant bears the perfect, another the staminate, another the pistillate flower.

The 24th class has natural orders.

- 1st order, *Filices*, the ferns. 3d order, *Algæ*, the lichens, seaweeds, &c.
2d " *Musci*, " mosses. 4th " *Fungi*, mushrooms, &c.

The genera are too numerous to be named here; we will describe them in connection with the plants. There is no necessity at present, for descending to minutiae; we will do that as we proceed. It is our intention, in the description of the separate plants, to take a prominent part of each one, such as the leaf, corolla, petal, nectary, &c., and describe its anatomy and physi-

ology; explaining the technical terms as we use them; thus making the work perfect within itself.

As might be expected in a confessedly artificial system, plants are brought together in a great number of cases, that are very dissimilar in many important respects. Linnaeus himself was very sensible of this, and proposed, and in fact laid the groundwork of a natural system, whose object it would be to class in groups those plants that resemble each other in all essential particulars. Jussieu came after him, and made great improvements in this department; he is called the Father of the Natural System. Linnaeus's Artificial System dwelt chiefly on the aspects and circumstances of the stamens and pistils; the natural one of Jussieu on the seed-lobes and insertion of the stamens. In the natural system there are at present five classes and upwards of 7000 genera.

In the flower we have witnessed the process of fructification or fruit-making, a perfect seed developed from an embryo. Let us now put one of these seeds in the ground, and observe how, from it, the plant is matured. When surrounded by warmth and moisture, it begins to expand; the case that confined it bursts; a root runs below and a sprout appears above. The root sends off filaments, which terminate in a series of little leech-like mouths termed spongioles. These mouths suck up the nutriment from the soil, and act like stomachs in instantly digesting it. It has been proved beyond doubt that the fluid, in these filaments, differs entirely from the substances it absorbs. As the blood in a man's body must pass through the lungs for purification, so must the sap for the same purpose be rendered fit for nutriment by the leaves; it is carried to them by the veins, and arriving there, throws out its oxygen and receives a supply of carbonic acid. We should remember that their respiration is the very opposite of ours; what is rejected as poison by us, is eagerly taken by them as necessary to their existence, and *vice versa*. The sap or blood, thus properly elaborated, is carried by the arteries to every part of the plant. After a while the bud appears, the blossom opens, and the circle of phenomena once more begins.

Plants were the earliest inhabitants of our earth. The history of their creation proves their possession of an existence independent of matter. *For the LORD GOD MADE every plant of the*

field BEFORE it was in the EARTH, and every herb of the field BEFORE it GREW. We consider the narrative of the creation of man to be a type of that of all other living beings ; the dust was formed into the image of each, and the breath of life imparted to it gave a material being. The vital principle is the same in kind through all gradations of existence. It has six properties, which we discover by the different series of phenomena each presents to us. These are Irritability, Mobility, Vital Affinity, Vivification, Sympathy and Sensibility. The first four are common to plants, which possess little if any of the last two, as they want the nervous system, the instruments of their manifestation. Irritability, or Excitability, is that power capable either of acting or being acted upon ; it is the main-spring of the whole movement. Mobility is the power of motion ; by it the sap ascends and descends, and the sensitive plant is enabled to shrink from the touch. Vital affinity is so called in contra-distinction to chemical affinity, which last unites bodies in a multiple proportion and only two at a time ; the former unites a dozen at once, and in all proportions. Vivification is the vitalizing or imparting of life. They possess these properties in a very extensive degree ; a root will last an immeasurably longer time than a man ; we have authentic evidence of seeds living over 4000 years.

Plants subsist on inorganic matter ; animals on nothing but organic. The vegetable kingdom is the purveyor of the animal, and this furnishes their great distinction. It was formerly thought that Instinct was denied altogether to plants, but the following anecdote will show the error of such a conclusion. "I was one day," says Aimé Martin, "sitting under the shade of those acacias called *Mimosa Eburnea*, whose thorns are as white as ivory. On a sudden I saw the deep shade in movement, and giving place to a flickering light let in upon me. The foliage seemed at once to have withered. A dark cloud passing overhead caused the phenomenon. When the cloud was past, and the sky had become serene, the foliage became reanimated and resumed its freshness. This acacia flourishes in the burning clime of India. My first solution of the cause of the sudden withering of the leaves was, that the habit of the tree was only to give light in the clear shade of the sun ; and that, by a kind of foresight, it refused its shade to the earth when it was not needed. On more exact observation I became convinced, that

the foresight announced a still more admirable intention. The leaves are so tender that when the rains fall upon them, they would be pressed down and torn by the thorns under them, had they not this forecast to fold themselves, and lie one upon the other, like tiles on a roof for mutual defence."

A great number of flowers have the singular property of regularly opening and shutting at certain times, as the four-o'clock flower, whose blossoms open at that time every day, to announce the hour of dinner. Linnaeus from these conceived his floral clock. Some serve as barometers; we have read that the peasants of Languedoc, in France, train to the sides of their cottages, a species of Carlina. When the flowers open it presages a pleasant day; when they wither, it is a sure sign of approaching rain.

Sweet nurslings of the vernal skies,
Bathed in soft airs, and fed with dew
What more than magic in you lies,
To fill the heart's fond view.
In childhood's sports, companions gay,
In sorrow, on life's downward way,
How soothing in our last decay,
Memorials prompt and true.

Ye dwell beside our paths and homes,
Our paths of sin, our homes of sorrow,
And guilty man where'er he roams
Your innocent mirth may borrow.
The birds of air before us fleet,
They cannot brook our shame to meet;
But we may taste your solace sweet,
And come again to-morrow.

Alas! of thousand bosoms kind,
That daily court you and caress,
How few the happy secret find
Of your calm loveliness!
"Live for to-day! to-morrow's light,
To-morrow's cares shall bring to sight,
So sleep like closing flowers at night,
And Heaven thy morn will bless."

The Rose.

THE ROSE has been known from time immemorial, so that it is impossible to discover its native country. The word is derived from the Greek, *rodon*, red; from whence comes Rosa, Latin, and Rose, English. In the *Sylva Florifera*, is an account of its birth. "Flora having found the corpse of a favorite nymph, whose beauty of person was only surpassed by the chastity of her mind and purity of her heart, resolved to raise a plant from the precious remains of this daughter of the Dryads, for which purpose she begged the assistance of Venus and the Graces, as well as of the deities that preside over gardens, to assist in the transformation of the nymph into a flower that was to be by them proclaimed queen of all the vegetable beauties. The ceremony was attended by the zephyrs, who cleared the atmosphere, in order that Apollo might bless the new created progeny with his beams. Bacchus supplied rivers of nectar to nourish it; and Vertumnus poured his choicest perfumes over the plant. When the metamorphosis was complete, Pomona strewed her fruit over the young branches, which were then crowned by Flora with a diadem that had been purposely prepared by the Celestials to distinguish this queen of flowers." There are many other narratives of its creation, enough perhaps to satisfy the mind as to the origin of the thousand varieties we are at present acquainted with. This genus presents every gradation of form, size, and fulness, and every shade of color, as even a blue and black have been produced by our florists. The Persian Rose grows thirty feet high; Lady Banks, twenty feet; the common Dog Rose twelve feet; and so on, down to the smaller kinds, which realize the saying, of the rarest essences being contained in the smallest caskets, by their superior beauty and fragrance. As it has more than ten stamens growing upon the calyx, it belongs to the 11th class, Icosandria (twenty husbands), and the pistils numbering more than ten, to the 13th order, Polygamia (many wives). The genus is characterized by the calyx being in the form of a pitcher, or urceolate, contracted at its orifice and terminated above in a five-cleft border, deciduous or falling off in the usual season. The five petals are remarkable for their great



Rosae Muscosa

Red Rose.

size and fine color. The seeds are very numerous and hispid (bristly), and all attached round the interior base of the calyx.

The useful among the species are the *Rosa Canina* (Dog Rose), a native of Europe. The flowers are white or palish red, with five obovate (heart-shaped, with the point downwards) petals. It grows to the height of about ten feet. The fruit is a fleshy, smooth, oval, red berry, of a pleasant, sweet, acidulated taste, containing sugar and uncombined citric acid. The pulp, separated from the seeds and the silky bristles in which they are embedded, is employed in the preparation of a confection, intended as a vehicle for other medicines, [W. and B.] The next is the *Rosa Centifolia* (hundred-leaved Rose). It grows to the height generally of six feet. The flowers are large, with many petals, of a pale red color, and supported upon stems beset with short bristly hairs. The petals are the portion used. They are extremely fragrant, and have a sweetish, slightly acidulous, somewhat bitterish taste. They are slightly laxative, and often administered in the form of a syrup, combined with purgative medicines; but their chief use is in the preparation of rose water [W. and B.], for which take of

Fresh hundred-leaved roses, six pounds; water, four gallons; distil to one gallon, and add to it a gill of alcohol for preservation.

The active properties of this plant reside in the oil and acid; the former is celebrated under the name of Otto of Roses. On distilling large quantities of the leaves with water, and allowing it to cool, a fragrant butter rises to the surface, when fluid of a yellow color, but white when cold. One hundred pounds of the petals afford in this way scarcely half an ounce of oil. We have detected its adulteration with other essential oils (a practice often pursued by the dealers in the article), by its property of concreting in cool weather, thereby separating from the oils that were mixed with it. By rubbing a drop of this oil with half a tea spoon full of fine sugar, and gradually pouring on it, stirring all the time, a pint of water, you can make a superior article of rose water in a few minutes.

The fixed sapid matter of the petals has been employed by itself, as a purgative, but we do not think it makes a very useful or safe medicine. The last variety of the *Pharmacopœia* is the *Rosa Gallica* or common red rose. This species is smaller than the preceding, but resembles it very much in the character of its

foliage. The stem is beset with short bristly prickles. The flowers are very large, with obovate widely spreading petals, which are of a rich crimson color, and less numerous than in the other species. The fruit is oval, shining, and of a firm consistency. It is much cultivated in our gardens. The petals, which are the parts employed, should be gathered before the flower has blown, separated from their claws, dried in a warm sun or by the fire, and kept in a dry place. The odor improves by drying. Their sensible properties and medicinal virtues are extracted by boiling water. They are an elegant vehicle in the form of infusion or tea, for tonic and astringent medicines, (W. and B.) This Rose was formerly white, it sprang from the tears of Venus on the death of Adonis, but was changed to red by Cupid overthrowing a bowl of nectar, which, falling to the earth, stained the rose. These roses were emblems, the white of the Yorkists, and the red of the Lancastrians, in the civil wars of England. Hay Drummond presented a lady of the Lancaster party with a white rose, saying

If this pale rose offend thy sight,
It in thy bosom wear,
'Twill blush to find itself less white,
And grow Lancastrian there.

Clemence Isaure, who instituted the floral games, awarded a single rose as the prize for eloquence. It was also given by Cupid to Harpocrates, the god of silence, as a bribe; whence originated the saying, "under the rose." It was formerly the custom to place a rose over the dining table, or at the doors of temples, or any place where secrecy was intended. A golden rose used to be consecrated by the Popes on Good Friday, and presented to some crowned head, none but such being considered worthy to receive it. It was the seal of Luther. The flower itself they considered an emblem of the mortality of the body, and the metal of which it was composed of the immortality of the soul. The Roman emperors used to allow their famous generals to add a rose to the other quarterings of their shields, some of which may be seen to this day in the armorial bearings of many of the noble families of Europe. It perhaps became in this way the national badge of England.

The Rose is universally allowed to claim precedence over all other flowers; now its own Queen, the head of the genus, the



Pyrus Japonica.
(Japan Quince.)

LITH. OF LEWIS & PROVIN, 272 PEARL ST. N.Y.

fairest of the fair, must be beautiful indeed! It is this we have chosen for illustration—The Rosa Muscosa or Moss Rose. It is generally in our day ranked among the Centifolias, but Linnaeus considered it only a variety of the Provence. Its specific characters are—Germs, ovate (egg-shaped); Calyx, peduncles (flower-stems), Petiole (leaf-stalk), and branches, hispid, glandular-viscid (moss-like); spines of the branches scattered, straight. These hair-like appendages contain a resinous and fragrant fluid. As we have considered the Rose somewhat in detail, it will not be necessary to review. Plants have attached to them factories, called glands, for making various products. As the liver in our bodies secretes bile from the blood, so from the sap do they combine the various elements into gums, resins, oils, honey, &c. A principal gland in flowers is the nectary, commonly called the honey cup. It varies in different flowers in shape, size, and structure; in the Larkspur and Violet it is formed by the prolongation of the corolla into a horn or spear; in the Nasturtium by a prolongation of the colored calyx; it is a small pit in the Crowfoot; and in the Grass of Parnassus, consists of little globular bodies, each attached to the end of a short filament, and interspersed among the stamens. In respect to its use, Dr. Snell says, there can be no doubt that the sole use of the honey, with respect to the plant, is to tempt insects, who, in procuring it, fertilize the flower, by disturbing the dust of the stamen, and even carry that substance from the barren to the fertile blossom. Every one is familiar with the German story of the angel of flowers clothing the rose with moss, and so much has been written on it, that we will merely mention its emblem—Superior merit, or as some name it in reference to its want of thorns, Pleasure without alloy.

The Japan Quince.

This plant is generally trained on a southside wall, to protect it from the cold and ensure it as much heat as possible. Its flowers of scarlet, pink, and white, make a beautiful ornament; they have a strange and peculiar lustre. It is cultivated to a

great extent in England, where it is more of a favorite than in our own country. It is in the 11th class, Icosandria, and order Pentagynia (five wives). The genus, *Pyrus*, is distinguished by the calyx five cleft, superior; corolla, five-petalled; pome (pulpy fruit, containing a capsule), five-celled, many-seeded; seeds compressed, ovate. There are several species. The *P. Communis* or pear tree. *P. Cydonia* or quina, which last has been separated from the genus *Pyrus*, and erected into a new one, *Cydonia*; it differs from the *Pyrus* in the circumstance that the cells of its fruit contain many seeds, instead of two only, as in the latter. The common quince is characterized by its downy deciduous leaves. It is so well known as not to require description. The seeds are the portion used in medicine; they are of a reddish brown color externally, white within, inodorous and nearly insipid, being slightly bitter when long chewed. The envelope contains mucilage, which is taken from it by boiling water. When this decoction is evaporated to dryness, three grains of it will thicken an ounce of water. It is used as a common mucilage. Some practitioners have employed it in diseases of the eye, but the sassafras pith, as a general rule, obtains the preference. Our plate represents the Japan Quince. It blossoms in January, making, with its scarlet-colored flowers, hardy enough to endure the cold of our winters, the most gorgeous present we have ever received from the East. Fairies' Fire is used indiscriminately as a name and an emblem when applied to the flower.

THE Introduction has taken up so much room in this number, that we must economize our space; an inconvenience, which, however, can occur but once.

The Forget-Me-Not.

THIS general favorite must be sought by the banks of rivers and in marshy situations. Its little blue eyes peeping up on every side, will assure the solitary traveller that he is not alone, but, on the contrary, undergoing the inspection of more optics than Argus possessed. It belongs to the class Pentandria (five husbands), and order Monogynia (one wife). The generic name *Myosotis* (mouse-ear), is owing to the hairy character of their leaves, and their growing longitudinally together like the ear of a mouse. Linnæus erected these rough-leaved plants into an order by themselves, the *Asperifolia* (rough-leaved). These plants have single petalled corollas, with five stamens and five naked seeds. It is remarkable that most of the blue flowers in this class are pink in the bud, the sudden change of which, from a bright red to a vivid blue, as the flower expands, is apparently caused by the loss of some acid principle. There are many species in this genus, but none of any considerable importance. The *M. Arvensis* or Field Mouse Ear, is an annual plant, covered with grey down, half a foot in height. Leaves oblong, rather acute. Flowers very small, white, on short pedicels; calyx acute; seeds smooth and shining—it abounds on dry hills. The *M. Palustris*, the only interesting one of the number, and which is represented in our plate, is so called on account of its growing in swamps or marshes. It is perennial; seeds smooth; calyx subovate, without hair, nearly as long as the tube of the corolla; stem slightly branched, leaves spear-shaped. The southern bank of the Fairy bath at the Luxembourg in France, is covered with a thick tapestry of this flower; they sparkle in July, clad in as bright a blue as that of the cerulean sky. Presenting inferior claims to admiration, on account of any superior merit or use, this species is celebrated through the world. It owes this notoriety to a foolish and impossible story, that has taken wonderfully with the public. About the best version is the following:—It is related that a young couple who were on the eve of being united, while walking along the delightful banks of the Danube, saw one of these lovely flowers floating on the waves, which



Myosotis Palustris.
(The Forget-me-not.)

seemed ready to carry it away. The affianced bride admired the beauty of the flower, and regretted its fatal destiny. The lover was induced to precipitate himself into the water, where he had no sooner seized the flower, than he sank upon the flood ; but making a last effort he threw the flower upon the shore, and at the moment of disappearing for ever, he exclaimed, "Forget me not," a circumstance that ever after emblematised the flower. As he was rather weak, he must have been quite near the shore, to have been able to throw it, which establishes the fact of the banks of the Danube being exceedingly precipitous. The M. Virginiana is the last. The Virginia Mouse Ear is hairy ; seeds bristled, with hooks ; leaves ovate-lanceolate, acuminate ; rachemes divaricate (clusters turning backwards). Leaves very large ; blossom white, roundish, entire, as long as the calyx, crowned at the mouth. It is a weed in cultivated ground, ranking with the rubbish. It flowers in July.

In vain I searched the garden through,
 In vain the meadow gay,
 For some sweet flower that might to you
 A kindly thought convey.
 One spake too much of hope and bloom
 For those who know of man the doom ;
 Another, queen of the parterre,
 Thorns on her graceful stem did bear ;
 A third, alas ! seemed all too frail
 For ruder breath than summer gale.

I turned me thence to where, beneath
 The hedgerow's verdant shade,
 The lowliest gems of Flora's wreath
 Their modest charms displayed.
 Lured by its name, one simple flower,
 From its sweet sisterhood I bore,
 And bade it hasten to impart
 The breathings of a faithful heart,
 And plead—whate'er your future lot,
 In weal or wo—Forget-Me-Not.



Passiflora.
(Passion-Flower.)

LITH. OF LEWIS & BROWN, 272 PEARL ST., N.Y.

The Passion Flower.

THIS flower is peculiar to America, but more particularly to the forests of the southern continent; where Nuttall says of this genus of scandent or climbing plants that—their immensely long and often woody branches attain the summits of the loftiest trees, or trail upon the ground, adorned with perennially green or falling leaves, sometimes palmate, or lobed like fingers; in others, entire, and like those of Laurel. They sustain themselves by means of undivided tendrils; and send out a long succession of the most curious and splendid flowers, of which no other part of the world offers any counterpart. Some of the flowers are exceedingly fragrant, and succeeded by pleasant tasted acidulous fruits, resembling berries or small cucumbers. Three species are indigenous in the United States, usually growing in light and dry soils, from the lower part of the States of Delaware and Maryland, to the south and west indefinitely. The arrangement of the stamens in the form of a cross, and the triple crown, occasioned the name given it by the Catholics, who first discovered it, as they at once considered it emblematic of the passion or suffering of the Saviour. It belongs to the class Gynandria (union of husband and wife), and order Pentandria (five husbands). The generic character is—a five-parted colored calyx; five petals inserted upon the calyx; the nectary or lepantheum (petal-like), a triple crown of filaments; the fruit a pedicellated pepo, or berry. The useful species are, 1st, the *P. Laurifolia*. The bay-leaved Passion Flower, a native of Surinam. The fruit grows to the size of a small lemon. It has a delicious smell and flavor, and is excellent for quenching thirst, abating heat of the stomach, increasing the appetite, recruiting the spirits, and allaying the heat in fevers.

2d. The *P. Maliformis*. The apple-shaped Granadilla. It is the Sweet Calabash of the West Indies. The flowers are large, and the colors red, white and blue, in rings, as is usual in this genus. The fruit is of the size of a large apple, yellow when ripe, with a rind enclosing a sweet pulp, with many seeds of a brownish color. It is served up at the table in desserts, where it is considered a great delicacy. The high character, however, borne by this fruit at the South, should not be considered as a

criterion of its merit by us of colder skies. It is possible we all know how to cultivate the senses to a high degree of perfection. On the ocean, sailors have described minutely, a ship in the distance, which, as we approached it, proved the truth of their information, when it was impossible for a landsman's eye to discern a speck in the horizon. Savages can hear miles off. John Hunter's sense of touch was so exquisite that he often told the seat of disease by the pulse alone, when the combined symptoms could not enlighten others ; and the gustatory (taste) nerve may be so educated as to perceive a delicious flavor in what, to us, would be insipid. This is the only way in which I can account for people relishing such fruits as I have just described. As a general rule, the inhabitants of hot countries are the most indolent of any on earth ; not necessarily so, for the observer of nature will find the heat alone a very insufficient cause of excuse. In very cold climates, the food is principally oily and the wind never blows. In hot climates we find aqueous vegetables and a constant current. In Curacao, on the shores of Columbia, N. L. $12^{\circ} 24'$, W. L. $69^{\circ} 03'$, where we spent the fall of 1844, the thermometer stood at 86° in the shade for an average of several months ; yet such was the constancy and power of the trade winds, that it was perfectly comfortable at any hour of the day. We were agreeably disappointed to find our experience so different from what we had anticipated of a sojourn in torrid regions. The people, instead of partaking of the juicy fruits which nature so opportunely provided, lived principally on meats, which they washed down with enormous quantities of wine and brandy. Their tastes were so *improved* (?) that all kinds of dressings for poultry, &c., had to be sweetened, and it was no uncommon thing to boil turkeys in molasses, and then proceed to bake them in the usual way. It was a great trial for our stomach to sit at table and witness the rapid disappearance of meats and liquors, followed by desserts that would nauseate any Northerner. We were one day coaxed by a polite gentleman, with mustaches that might have encircled his little cranium, to try this fruit ; the first mouthful was more than enough. The landlord, noticing our dislike to the native productions, took from his closet and set on the table, four little, withered, dirty-looking apples, evidently considering them, poor as they were, an extra luxury. We were convinced, from what we saw on the island, that it would be a

rather difficult thing to find a healthy location for any one indulging in the habits of these people. The ancients thought it impossible for living beings to exist under the equator on account of the intense heat; and we partake, in a measure, of the same kind of feeling when we believe accounts of the insalubrity of places without inquiring into the customs of the inhabitants.—The roots of this last species are emetic, narcotic, and poisonous. They contain a principle resembling morphine, which in some species extends even to the flowers and fruit. The most beautiful of the kinds now cultivated is the *P. Princeps*, with clusters of scarlet flowers, the one we have represented; the hybrids of which are peculiarly elegant; it was at one time much cultivated, and is now to a great extent; but the superior hardiness of the blue, *P. Cerulea*, making it the most common, excepting the one just mentioned, it is the most elegant of the genus. The flowers are large and handsome; and the leaves assume, in autumn, a vivid crimson that is exceedingly beautiful. Harte describes it as the

All beauteous flower ! whose centre glows
With studs of gold ; thence streaming flows
Ray-like effulgence. Next is seen
A rich expanse of varying hue,
Enfringed with an empurpled blue,
And streaked with young Pomona's green.

High o'er the pointal decked with gold
(Emblem mysterious to behold),
A radiant cross its form expands ;
Its opening arms appear t' embrace
The whole collective human race,
Refuge of all men, in all lands.

The fruit is egg-shaped, and disagreeable to the taste. This flower is said to bloom about Holy Rood day, to commemorate, according to the legends of the Church of Rome, the day in which Helena, the mother of Constantine, in 326, A. D., discovered the Cross on which the Saviour was crucified. Our readers will know, of course, this depends alone on the accidents of the climate. This should have no local emblem, but embrace all.

Oh ! ne'er with cold and careless glance, gaze I on thee, sweet flower,
Nor thoughtless pluck thee, as I'm wont thy sisters of the bower,
No—fancy gifts thee with a spell, unknown to all beside,
Which checks the hand thy beauty woos, and quells the glance of pride.

Each flower some chosen emblem is ; one is for beauty's bloom,
Another friendship claims ; a third sheds fragrance o'er the tomb ;
But link'd with holy memories, to penitence how dear !
Thy shrine is aye the broken heart, thy dew contrition's tear.

Yet glad and dear I hold thy lore, and oft with curious eye,
Do trace the mystic characters that in thy bosom lie.
Types of those fearful instruments of agony and scorn,
The Cross that bore the Lord of life, the nail, the twisted thorn.

MORAL OF FLOWERS.

The Violet.

THE Violet is not only the name of a genus, but the type of the natural order of Violaceæ ; the order, according to Gery, is composed of herbs ; in tropical climates, shrubby plants, with mostly alternate simple leaves, on stalks, with leafy appendages at their base, and irregular flowers. The flower cup is made of five permanent leaves, often ear-shaped at the base. Blossom is composed of five unequal leaves, one of them larger than the others, and commonly bearing a spur or sac at the base ; the summer buds rolled into a cylindric form. Stamens five, with short and broad filaments, which are usually lengthened beyond the introse united anthers, two of them commonly bearing a gland or a slender appendage, which is concealed in the spur of the corolla ; the anthers approaching each other, or united in a ring or tube. Style usually turned to one side, and thickened or hooded at the apex. Fruit a one-celled capsule, opening by three valves, each valve bearing a parietal placenta in the middle. Seeds numerous, inverted, with a crusty skin. Embryo straight, nearly the length of the fleshy albumen. The derivation of the word Violet is very uncertain ; about the best account concerning it seems to be, that it sprung up on purpose to be the food of the metamorphosed Io, daughter of Inachus, who had been changed by Jupiter into a beautiful white heifer, but fed by jealous Juno's orders upon bitter herbs. It is written that it was the study of this flower which induced John Bertram, a quaker of Pennsylvania, to study plants. He had employed his time in agricultural pursuits without a knowledge of botany, but being in the field one day, he gathered a violet and examined its formation, and



Caprifolium Perfoliatum
Viola Odorata
Viola Tricolor

Honeysuckle.
Sweet White-Violet
Pansies.

reflected upon it until he became so prepossessed with the flower that he dreamed of it. This circumstance inspired him with a desire of becoming acquainted with plants ; he therefore learned, for that purpose, as much Latin as was necessary, and soon became the most learned Botanist in the new world. Whatever is conducive to man's enjoyment or comfort, is sure to be widely disseminated for his benefit, and always within his reach ; the Violet, consequently, is found in all parts of the world ; it disputes the palm of supremacy with the Rose even in its own Persian home. It came originally from the south of Europe, yet there is at present no land with whose memory it is not embalmed in song. Howitt, in speaking of a morning walk, says,—All unexpectedly, in some embowered lane, you are arrested by the delicious odor of Violets, those sweetest of Flora's children, which have furnished so many beautiful allusions to the poets, and which are not yet exhausted ; they are like true friends, we do not know half their sweetness till they have felt the sunshine of our kindness, and again, they are like the pleasures of our childhood, the earliest and the most beautiful. [A sentiment in which the Editor begs leave to differ from Howitt; he cannot understand why Christians should take so much delight in recalling babyish recollections ; if they have no enjoyment, the fault is surely their own ; and as day after day passes away, and the termination of their pilgrimage draws nigh, if they feel not the gales of refreshing from the Land of Promise, he thinks they ought to examine narrowly the road if it be the straight and narrow path.] In March, they are seen in all their glory, blue and white, modestly peering through the thick clustering leaves.

This genus is in the CLASS PENTANDRIA ; ORDER MONOGYNIA. It is characterized by the—Calyx, five-leaved ; corolla, five-petalled, irregular, horned at the back ; anthers, cohering ; capsules, superior, one-celled, three-valved. First in the rank of species we will take the BLUE VIOLET—*VIOLA ODORATA PURPUREA*. This is an evergreen creeper, with heart-shaped, scalloped, smooth leaves ; the flower-cup obtuse ; and the two lateral leaves of the blossom with a bearded or hairy line. The runners are furnished with fibrous roots, and send up annually tufts of leaves and flowers ; these last are on the summits of delicate, four-cornered stalks, which spring directly from the root ; the leaves of the blossom are longer than those of the flower-cup,

egg-shaped, with the narrow end towards the stem, and of a bluish purple color, except at the claws, which are somewhat paler; they have an exceedingly agreeable odor, and somewhat bitter taste, both of which can be obtained from them by boiling water. The infusion is often used by chemists for testing acids and alkalies, being reddened by the former, and rendered green by the latter. Besides its beauty, it is cultivated for medical use in our gardens; for which purpose the blossoms should be collected before they are fully blown, and rapidly dried, either by a heated room or by exposing them to a current of very dry air. The officinal preparation is a syrup, to make which, take of

Fresh Petals of the Violet, two pounds; boiling water, five pints. Macerate for twenty-four hours; then filter the liquor through fine linen, without expression; lastly, add twenty-nine ounces of sugar to every pint, and form a syrup.—[DUB. P.]

It has a bright blue color, and the flavor of the flower; given to infants in the dose of a quarter of an ounce, it will act as a gentle laxative; though we must say, not as well as barley water. Hasselquest tells us that this is one of the plants most esteemed in Syria, particularly on account of its great use in making violet sugar, of which Sorbet is composed. The most popular Sherbet of the Turks, and which is drunk by the Grand Seignior himself, is made of sugar and Violets. It is the emblem of Modesty.

The next in order is the SWEET WHITE VIOLET—*VIOLA ODORATA ALBA*, which is merely a variety of the purple, differing from it but in color. They were originally all white, but cultivation changes the color, and makes the plant more fragrant; it is the emblem of Candor and Innocence. A careless observer would be apt to overlook the Violet altogether, as they never obtrude themselves into notice, but still retain the bashful timidity of the nymph whom Diana changed into one of them, by partially concealing themselves in their abundant foliage. A story is told of its being given as a device to an amiable and witty lady, of a timid and reserved character, with the motto, “*Il faut me chercher*”—I must be sought after. In medicinal properties, it of course closely simulates the other.

The last we shall mention is the PANSIES, OR HEARTS EASE—*VIOLA TRICOLOR*. It has an angular spreading, divided stem, with oblong, deeply scalloped leaves, the appendages at the base of the stalks ranged opposite each other, with the odd terminal leaf largest. It has been well remarked that the tints of this

variable flower, are scarcely less numerous than the names which have been bestowed upon it. Pansy is a corruption of the French name *Pensée*, thought, as Ophelia says, "and there's Pansies, that's for thoughts." This plant spreads itself everywhere, growing in corn-fields and waste as well as cultivated grounds; it will grow in any soil and situation, but the self-grown plants degenerate very rapidly, producing only small dingy flowers. It is a plant that must be in company to shine, as its own perfume is weak, and it requires a cluster to produce much effect, both in regard to sight and smell. So rich and varied are the tints, in purple and gold, of this flower, exceeding far the workmanship of art, that it is impossible ever to find two Pinks of my John, as it has been whimsically called, alike. The fresh plant has an extremely glutinous taste, and makes, according to Bergius, a useful mucilaginous purgative. It has been celebrated, both in ancient and modern times, as a remedy for the CRUSTA LACTEA of infants, which is an eruption of broad pustules, full of a glutinous liquor, forming white scabs when ruptured; for this purpose a handful of the fresh herb, or half a drachm of it dried, boiled two hours in milk, is to be taken night and morning. Bread, with this decoction, is to be made into a poultice and applied to the affected part; for the first eight days it makes it worse, but when finally persevered in is almost sure to cure. It has also been useful as an expectorant, which power it owes to an alkaline principle, common to the genus, called *Violine*. This is of a white color, very soluble in alcohol, slightly so in water, and forms salts with the acids. As it exists in the plant in the state of a malate, magnesia is given to the malic acid, with which it combines and sets free the *Violine*, which is afterwards extracted from the precipitated matters; it is a powerful poison.

Nuttall says, that the most successful mode of cultivating the various species in our own country, is in a moist or shaded rock border, which is nothing more than a low mound, held together by scattered angular stones. Phillips, an English writer of much eminence, says, that the sweet Violet, when growing naturally, is found on banks where the soil is light, and where it has a partial shade. It seems to love a mixture of chalk in the earth, as we have observed that it propagates itself most rapidly in such situations both by its runners, in the manner of strawberries, and also by seed. He goes on to remark, that in the spring he found the banks be-

tween two towns covered with Violets, principally white. The soil was a kind of chalky loam, and on some of the banks he found a considerable quantity of sweet Violets, of a murrey or pale mulberry color, and others of a dingy flesh color not much unlike common blotting paper. Near these he uniformly discovered patches of white Violets on one side, and the purple variety on the other, which evinced the change to be owing to the accidental mixture of the farina of the two varieties, as he observed some of the white Violets had the edges of their petals tinged with purple, and the spurs of the greater part were tinged with that color with a reddish cast. He came to the conclusion that the soil in some degree assisted in contributing to this unusual color of the sweet Violet, as on a grass-plot where the soil was a mixture of cold clay and chalk, Violets grew spontaneously of a rich plum red color, and as odorous as the White or Purple Violets. Double Violets are easily increased by parting the roots in the autumn. The seeds of the Pansy may be sown at any time. We must remember that ripening seeds always injures the plant; it destroys this one, in nearly all cases; which can be prevented by cutting off the branches when the beauty of the blossom is past. They will then send out fresh branches and continue in bloom during the year. Transplanting adds to the beauty of all the Violet species. The prizes of the Floral Games of the Ancients consisted of a *Golden Violet*.

And in that golden vase was set
The Prize—the purple violet.

L. E. L.

By nature urged, by instinct led,
The bosom of a flower he sought,
Where streams mourned round a mossy bed,
And Violets all the banks enwrought.

Of kindred race but brighter dyes
On that fair bank a Pansy grew,
That borrowed from the indulgent skies,
A velvet shade and purple hue.

The tints that streamed with glossy gold,
The velvet shade and purple hue,
The stranger wondered to behold,
And to its beauteous bosom flew.

But wounded to the Violet flew,
That boasts no depths of glowing dyes,
Arrayed in unbespangled blue,
The simple clothing of the skies.

LANGHORNE.



Jasminum Officinale
Rosa Semperflorens
Dianthus Prolifer
Viola Odorata, Purpurea

White Jasmin.
Monthly Rose.
Garden Pink.
Blue Violet.

The Monthly Rose.

WE find the peculiarities of the various countries stamped, not only on the inhabitants of the Animal Kingdom, but equally so on the Vegetable. The Roses of China are distinguished by their light and crispy qualities. This species was brought from that country to England in 1789. It was at first considered so very delicate as to require a constant residence in a hot-house, but necessity soon placed it in pots, where it thrrove even better than it had done before ; and very soon it was transferred to the open air, where it flourished to perfection. At present the usual mode of propagating Roses is by slips or layers ; the first ones sold, of this species, brought several guineas each, but their universal diffusion soon lowered the price to a merely nominal rate. In appearance it resembles the Damascena. The *Rosa SEMPER-FLORENS—CHINA* Rose, has the germs of an oblong egg-shape ; germs and flower-stalks hairy ; stem prickly. The flower-stalks spring from different heights, but form a flat top. It frequently attains the height of ten feet. It is one of the earliest flowering Roses, and in mild seasons, planted against a wall, will flower in April. The variety represented in our plate bears beautiful crimson flowers, from January to December. The Dutch are said to have invented a method of preserving the dwarf species a great length of time, by budding them on the larger kinds, and in this way produce a tree covered with various and differently colored species. This is the emblem of Beauty ever new.

The White Jasmine.

THIS plant appropriately signifies Delicacy and Elegance. Cowper describes the

Jasmine throwing wide her elegant sweets,
The deep green of whose unvarnished leaf
Makes more conspicuous, and illumines more,
The bright profusion of her natural stars.

It is the type of the natural order Jasminaceæ, which consists

of a few Asiatic herbs, with compound leaves and fragrant flowers. It is in the class Decandria; order Monogynia. The generic character of the *JASMINUM OFFICINALE*—WHITE JASMINE, is—coral salver-form, five to eight-cleft; berry two-seeded, each seed solitary and losing its external coat, which dries and falls off. The specific character is—leaves ranged in opposite rows and taper form; buds almost upright. This climber thrives well in a common garden soil, and bears its white flowers from June to October. This plant, when first introduced into France, was very much admired for the delicate lustre of its star-like flowers; they at first took considerable care of it, but at last left it mostly to itself, when they found it would do better without their aid. Its flexible branches twine around our window sills, and cause each gale that sweeps by to almost intoxicate with its delicious odors. It became neglected, and at the end of the seventeenth century there was but one place in Europe where it could be obtained, and that was in the garden of the Grand Duke of Tuscany, at Pisa. Jealous that any one should possess this charming plant but himself, he would not allow his gardener to give away even a flower on any consideration, which order was disobeyed by the man presenting his betrothed with a sprig in a birth-day bouquet. She had profited by the instruction her lover at times had given her relative to the cultivation of plants, and observing her prize with delight, as soon as he had departed, planted it, and was so successful in its culture that she amassed a small fortune by the sale of the cuttings; enough to render them independent enough to marry. From this circumstance arose the proverb in that place, “that she who is worthy to wear a nosegay of Jasmine is as good as a fortune to her husband.” This plant, of course, is only valuable as an odor; it was formerly celebrated in Italy, in some parts of which even at the present day the oil is considered a specific for rheumatic pains and the cure of paralytic limbs. This oil is obtained by alternating layers of the flowers with cotton saturated with the oil of ben or any other scentless fixed oil, and exposing the whole in a covered vessel to the rays of the sun; the flowers are renewed until the oil becomes saturated with their odor, and it is then separated from the cotton by pressure; there is no other way of eliminating the odor, as the scent is lost entirely by distillation. The seeds of the Jasmine do not ripen in our climate, but the plant is increased by layering down the

branches which take root in one year, and may then be separated from the parent stock and planted where they are to remain. Tyas says, that it may also be propagated by cuttings, which ought to be planted in the early part of autumn, and the earth covered with sand, ashes, or saw-dust, to keep the frost from entering the ground.

The Honeysuckle.

THE Woodbine, as this is generally called in poetry, is an ornamental deciduous climber, bearing a shaded yellow flower from May to July, and is celebrated for the delightful fragrance with which it fills the air, in the evenings after rain, the refreshing it receives causing it to put forth unusual energy. It belongs to the natural order, Caprifoliaceæ, and artificial class, Pentandria; order Monogynia. The LONICERA PERICLYMENUM—HONEYSUCKLE, takes its generic name from Lonicer, a physician and naturalist, who lived about the middle of the sixteenth century. Its characters are,—calyx five-toothed; corol tubular, long, five-cleft, unequal; stamens protruded out of the corols; stigmas globose; berry two or three-celled, distinct; seeds many. It has another name, Caprifolium (which species in reality differs from this, in having two lips, or unequal), from the two Latin words a goat and a leaf—because those animals are said to be remarkably fond of it. The specific name is from the Greek, to roll round about. It has a woody, shrubby, turning stem; the branches from it nearly opposite, round and smooth. The leaves also opposed to each other, on very short foot-stalks, elliptical, entire, sometimes hairy and whitish beneath. The flowers are in a terminal head, spreading out in a radiate manner. It bears red berries, crowned with a five-toothed cup, bitter, and of a sweetish flavor. There is a curious variety, with sinuated, variegated leaves, called the Oak-leaved Honeysuckle. It is principally on the Oak tree that this flower delights to climb, adorning the King of the Forest with its bright crowns and beautiful festoons of perfumed garlands. And, as Phillips says, it seems peculiarly fitted for just such an ornament. In the wilderness

walks it should have liberty to climb the trees, and hang its wreaths from branch to branch ; and where the ivy gives verdure to the bare trunk, there should the Woodbine display its blossom and shed its odors. It is the emblem of Bonds of Love. This whole tribe of plants belongs chiefly to the temperate regions. They are generally bitter, and rather active or nauseous in their properties ; some few bear eatable fruit.

It was a tendril of the Woodbine that bound the fig leaves around Adam and Eve, which, when cast off, after they left it, took root and sprouted ; that it was in there we have Milton's authority.

Let us divide our labors ; thou where choice
Leads thee, or where most needs ; whether to wind
The *woodbine* round this arbor, or direct
The clasping ivy where to climb ; while I
In yonder spring of roses, intermixed
With myrtle, find what to redress till noon.

The Pink.

THIS plant also is the type of a natural order, the Caryophylaceæ, which are herbs with opposite entire leaves, destitute of any appendages at their base, the stems swelling out at the knots ; flowers are regular ; calyx of four or five sepals or cup-leaves ; the corolla or blossom of the same number, sometimes wanting ; stamens as many or twice as many as the petals ; styles or stigmas two or five, distinct ; capsule two or five-valved, or opening only at the apex by twice as many valves as stigmas. The primitive Pinks are simply red and white, emitting a fragrant odor ; but cultivation has altered the shades and doubled the petals, and we have them now from a delicate rose color to a perfect white, and from a deep red to a brilliant scarlet ; in many varieties, opposite colors on the same flower. This garden Pink has become associated with the memory of a grandson of Louis the Fifteenth, the young Duke of Burgundy. Some flatterers tried to persuade him that Nature obeyed his will, by proving, that Pinks which he had planted came up in a single night, and by removing the pots and substituting others, really

made him think it was so. One night, unable to sleep, he wished to rise, but was then told it was midnight. "Well," replied he, "I will have it day." The DIANTHUS PROLIFER—GARDEN PINK, is in the class Decandria; order Digynia. The generic name is from the Greek, meaning divine flower, so named from its pre-eminent beauty and fragrance; it is characterized by the inferior cylindrical calyx, one-leaved, with four or eight scales at the base; petals five, with claws; capsule cylindrical, one-celled, opening at the top. Our species is the pretty pink-flowered annual, occasionally found in gravelly pastures, with the flowers clustered in heads. This plant is a native of Africa; it had found its way into Spain at the time of Augustus Cæsar; it was taken from Biscay by the conquering legions he sent there to put down a rebellion, and by them conveyed to Rome, where it was a great favorite, and was universally worn in the chaplets of fragrant blossoms at meal times; from whence it was disseminated throughout Europe. It was early introduced into our own country, and is now in its palmiest days. Its true origin not being generally known, Shaw, an English poet, considered it a native of Italy, where at present it is little valued, as the modern Italians hold perfumes in aversion: in the following lines he alludes to both ideas.

In fair Italia's bosom born
Dianthus spreads his fringed ray,
And glowing 'mid the purpled morn,
Add fragrance to the new born day.

Oft by some mould'ring time-worn tower,
Or classic stream he loves to rove,
Where dancing nymphs, and satyrs blithe,
Once listened to the notes of Love.

Sweet flower, beneath thy natal sky,
No fav'ring smiles thy scents invite;
To Britain's worthier regions fly
And paint her meadows with delight.

It is the emblem of Lively and Pure Affection. Mary Robinson sings—

Each pink sends forth its choicest sweet,
Aurora's warm embrace to meet.

It has no medicinal properties that entitle it to much consideration. Phillips says, that the new varieties can only be raised

from seed, and that when favorite kinds are so procured, they may be increased by pipings; and even when a sufficient number has been procured, this must not be neglected, as old woody plants frequently degenerate or perish during the winter. During the winter of 1821-2, which was unfavorable to Pinks, more than half the flowers in the country (England) lost their character; so that the summer of 1822 produced only White Pinks, excepting the old Red Pink, which has given name to a kind of rose-color, and this variety we observed retained its color in all situations. Mr. Hogg, a successful cultivator of this and some other flowers, says the Pinks should never be suffered to remain longer than two years without either change of soil or situation; and that when they are moved and transplanted in the spring, they never do well or show half the beauty which those do that are planted in September; the laced Pinks in particular appear almost plain and without their distinguishing character. Em-merton says, that Pink beds should be topdressed in the spring, if you have a desire to excel in blooms, with some old night soil or sugar-baker's scum, finely sifted and thrown over it; and adds, that the strong blowing plants should not be allowed to bloom more than eight or ten blooms, and those that are weaker and of a less size, not more than four. A month before the plant blooms, it will be well to lop off all the weak stems which are sent up, and to clip the lateral pods also with a pair of scissors. Phillips adds, that if from five to seven plants should be placed in a star-shape, six or nine inches apart, they will eventually appear as one large plant, and produce a fine effect, more especially on grass lawns. When the roots become old and woody they may be taken up and divided into slips, as it is desirable to retain a good variety when it is once procured; this more especially, as its odor is of a refreshing nature, which, together with the fact, that it retains its beauty a long time without fading, when placed in wet sand, and is but little affected by the steam of hot dishes, will always make it an elegant addition to the dinner table, where its long stalks will enable the hand of grace to arrange it in tasteful groups.

It is a well known property of many flowers, that they open and close at regular periods, as accurately too, in many cases, as a chronometer can mark the time; species of the Broom and Pink, some of which we have in the present number, display

these phenomena. A Clock of Flora, or Dial of Flora, is given in Loudon's Encyclopedia, which we copy in this place as it will be the most convenient for future reference.

DIAL OF FLOWERS.

Yellow Goatsbeard,
Late Flowering Dandelion,
Bristly Helmintia,
Alpine Borkhausia,
Wild Succory,
Naked Stalked Poppy,
Copper-colored Day Lily,
Smooth Sow Thistle,
Alpine Agathyrsis,
Small Bindweed,
Common Nipple Wort,
Common Dandelion,
Spotted Achyrophorus,
White Water Lily,
Golden Lettuce,
African Marygold,
Common Pimpernal,
Mouse-eat Hawkweed,
Proliferous Pink,
Field Marygold,
Purple Sandwort,
Small Purslane,
Creeping Mallow,
Chickweed,

Tragopogon Pratensis,
Leontodon Serotinus,
Helmintia Echiooides,
Borkhausia Alpina,
Cichorium Intybus,
Papaver Nudicaule,
Hemerocallis Fulwe,
Sonchus Lævis,
Agathyrsis Alpinus,
Convolvulus Arvensis,
Lapsana Communis,
Leontodon Taraxacum,
Achyrophorus Maculatus,
Nymphaea Alba,
Lactuca Sativa,
Tagetes Erecta,
Anagallis Arvensis,
Hieracium Pilosella,
Dianthus Prolifer,
Calendula Arvensis,
Arenaria Purpurea,
Portulaca Oleracea,
Malva Caroliniana,
Stellaria Media,

A. M. OPENING.	H. M.	P. M. CLOSING.
H. M.	H. M.	
3	5	9 10
4	0	12 0
4	5	12 0
4	5	12 1
4	5	8 9
5	0	7 0
5	0	7 8
5	0	11 12
5	0	12 0
5	6	4 5
5	6	10 0
5	6	8 9
6	7	4 5
7	0	5 0
7	0	10 0
7	0	3 4
7	8	2 3
8	0	2 0
8	0	1 0
9	0	3 0
9	10	2 3
9	10	11 12
9	10	12 1
9	10	9 10

Many flowers are admirable barometers, among which perhaps the Scarlet Pimpernal takes the lead. It is certain in its indications, as the petals close at once on the approach of moisture ; also, the awns of Barley.

See hieracium's various tribe
Of plumy seed and radiate flowers,
The blooms of time their course describe,
And wake and sleep appointed hours.

Broad o'er its imbricated cup
The goatsbeard spreads its golden rays,
But shuts its cautious petals up,
Retreating from the noontide blaze.

Pale as a pensive cloistered nun,
The Bethlehem-star her face unveils,
When o'er the mountain peers the sun,
But shades it from the vesper gales.

Among the loose and arid sands,
The humble arenaria creeps ;
Slowly the purple star expands,
But soon within its calyx sleeps.

And those small bells so lightly rayed
With Young Aurora's rosy hue,
Are to the noon tide sun displayed,
But shut their plaits against the dew.

On upland slopes the shepherds mark
The hour when, as the dial true,
Chiconium to the towering lark,
Lifts her soft eyes serenely blue.

And thou, " wee, crimson-tipped flower,"
Gatherest thy crimson mantle round
Thy bosom at the closing hour,
When night-drops bathe the turfey ground.

Unlike silene, who declines
The garish noon tide's blazing light ;
But when the evening crescent shines,
Gives all her sweetness to the night.

Thus in each flower and simple bell,
That in our path untrodden lie,
Are sweet remembrances which tell
How fast their winged moments fly.

SMITH.

The Broom.

THERE is sometimes a little confusion in classing the Brooms, which arises from not paying sufficient attention to the generic distinctions between the Genesta and Spartium. The **SPARTIUM SCOPARUS**—BROOM, is a common European shrub, from three to eight feet in height, with numerous five-cornered branches, which are of a bright green color; the leaves are hairy, quite small, of an oblong shape, and hang either separately or in threes. The flowers, which are very numerous and showy, are supported on short axillary foot-stalks, separate, and of a golden yellow, continuing in blossom from July to October, which are able to convert, as Mr. Martyn observes, the most barren spot into an



Spartium Scoparium
Borago Officinalis
Geranium

Broom
Borage
Gaines King.

odoriferous garden. At this season Wordsworth thus describes it—

On me such beauty summer pours,
That I am covered o'er with flowers;
And when the frost is in the sky,
My branches are so fresh and gay,
That you may look at me and say,
 This plant can never die.
The butterfly, all green and gold,
 To me hath often flown,
Here in my blossoms to behold
 Wings lovely as his own.

The Furze and Broom are closely associated, both bearing flowers of the butterfly order, the golden bloom of which so pleased Linnæus, that he fell on his knees enraptured at the sight, which he beheld for the first time on his visit to England in 1736. He conveyed some of the plants to London, but could never preserve them through the winter. It is in the class *Philadelphia*, order *Decandria*. Darwin says, in allusion to the union of the stamens at the base, and there being but a single pistil :

Sweet blooms *Genista* in the myrtle shade,
And ten fond brothers woo the haughty maid.

The generic name is derived from the Greek, *rope*, because of the use of the slender branches and bark in making cordage. It is characterized by the calyx extending downwards; keel generally pendant; filaments adhering to the germ; stigma villose lengthwise on the upper side. The seeds of our species are contained in a compressed legume, hairy at the sutures.

The whole plant has a bitter nauseous taste, and when bruised, a strong peculiar odor. The tops of the branches and seeds are the portions used, from which alcohol and water will extract their active properties. Cullen prescribed this plant as a cathartic and diuretic, in the form of decoction, made by boiling half an ounce of the fresh tops in a pint of water down to half a pint; of which he gave a fluid ounce every hour until it operated. This species is the Emblem of Neatness.

Genista is celebrated for having given name to a long line of English princes, by Geoffry, Earl of Anjou, adopting it from the incident of his wearing a sprig of Broom in his hat on a day of battle. It is very uncertain from whence the name is derived; some refer it to *Genu*, a knee, in allusion to the bending of the

twigs; others to *Geno*, to produce, because it grows wild in abundance. It is characterized by a two-lipped calyx, five-toothed, the two upper teeth very short; banner oblong, reflexed back from the pistil and stamens. It is the emblem of Humility, from its growing in sandy soils where nothing else will flourish. When the husbandman intends reducing such wastes to cultivation, he first sows this kind of seed, which springs up in bushes, confining the soil, and giving it sufficient stability to enable him to sow others. Blake remarks, that in Belgium and Holland the Broom is succeeded by the Acacia; the branching roots of which, stretching out in various directions, sustain the soil, as it were, in osier baskets; and finally they succeed in making the desert bloom with the Rose. Blake also tells us, that the sand-hills formed in the vicinity of Bordeaux, formerly threatened the destruction of the entire villages adjacent, of which it was calculated that no less than seventeen would be overwhelmed in the course of a century; when M. Bremontier was so fortunate as to discover a means of averting the danger. Observing the sand thus thrown up was not devoid of mixture, he scattered over it the seeds of Broom and Maritime Pine, and in order to prevent their being swept away by the wind, he covered them with brambles and branches of underwood. The seed sprouted; the Broom first rose above the ground, and some time after the young pines appeared; the latter, however, made but little progress, seeming to be choked by the rapid growth of the Broom; yet in the course of a few years the pines gained the ascendency, and drove their antagonists from the field, or rather, like the cannibals, after destroying their enemy, fed upon their remains. We need hardly observe that the inventor gained his object, and secured himself a blessed memory.

The *GENISTA TINCTORIA*, or DYER'S BROOM, has some medicinal reputation, derived probably from confounding it with the *Sparbium Scoparium*; its common use is to dye a yellow color, whence it derives its name. The Russian peasants use it in a form of decoction, both externally and internally, as a remedy for hydrophobia; many trials have been made with it to test its virtue in that respect, but they have all resulted in proving it worthless.

The Borage.

THIS is another type of a natural order, the Boraginaceæ, consisting of herbs and sometimes shrubby plants, with round stems and alternate rough leaves; the flowers often in one-sided clusters, which are spiral before expansion; calyx of five leafy and persistent sepals, more or less united at the base and regular; the limb five-lobed, often with a row of scales in the throat; stamens as many as the lobes of the corolla, and alternate with them; ovary deeply four-lobed, the style proceeding from the base of the lobes, which in fruits become little nuts or hard achenia; seeds with little or no albumen. The *BORAGA OFFICINALIS*—*BORAGE*, is in the class Pentandria, order Monogynia; the generic name was formerly written *Corago*, from *Cor*, the heart, and *Ago*, to affect, it being a great comforter in melancholy. It was formerly cultivated much more than at present, but it fell in general estimation as its medicinal value declined, and there are not many who care much to preserve it for ornament alone, although its fine blue star-like flowers should certainly insure it a place in our gardens.

The generic character is—corolla rotate, throat closed with rays. The species has all the leaves alternate, with a spreading calyx. To see the fine small protuberances at its throat, you must take off the corolla very carefully, which will enable you also to see the manner of the attachment of the stamens. It is an annual, juicy, European plant, about one or two feet high, bearing flowers from June to September. It is a native in England, the people of which, from the rough and prickly leaves and general hairiness of the plant, have made it the emblem of Bluntness. Every part of the plant abounds in mucilage, which can be plentifully obtained from it by expression. It is used by the English in the manufacture of a refreshing and pleasant summer beverage, very popular, and much patronized by all classes, known by the name of Cool Tankard. With the French it is a great favorite, as the stem and leaves contain saltpetre and other saline ingredients. It forms a weak, though somewhat cooling medicine, and is used by them in catarrhal affections, rheumatism, diseases of the skin, &c. It is used in the

form of an infusion, sweetened with sugar or honey; or the simple expressed juice, which is undoubtedly the best for its exhibition, is given in doses from two to four ounces. A poultice is sometimes formed of the flowers; which is the last use to which the plant is applied, as the distilled water, syrup and extract, have gone into oblivion. Mrs. Whitman writes:

Near where yon rocks the stream inurn,
The lonely gentian blossoms still;
Still wave the *Star-flower* and the fern,
O'er the soft outline of the hill.

The Geranium.

THE natural order of Geranaceæ comprises a numerous family of herbs and shrubs, which are commonly strongly scented, as the foliage of them all abounds with an aromatic, resinous matter, and an ethereal oil. They belong to the class Monadelphia, and were formerly included under one common name in the same genus; but succeeding botanists have separated them into three distinct genera, under different orders, which are known as follows:

The genus ERODIUM (HERON'S BILL) has five stamens; calyx five-leaved; petals five; scales five, alternate with the filaments, and honey-glands at the base of the stamens; arils or corri, five, one-seeded, awned, at the base of a rostrate or beaked receptacle.

The PELARGONIUMS (STORK'S BILL) have seven stamens; calyx five-parted, the upper segment ending in a nectariferous tube, running down the peduncle or flower-stalk; corolla five-petalled, irregular, the two upper petals unusually broad, with colored veins; the filaments are ten, of which three are usually without anthers.

The GERANIUMS (CRANE'S BILL) have ten stamens; calyx five-leaved; petals five, regular; glands five, honey-bearing, and united at the base of the longer filaments.

The first consists of hardy plants, with little in the way of beauty to recommend them. The second is a native of the

Cape of Good Hope, and comprises the great majority of the entire natural order; they have been universally introduced, and as they stand the confined air of our sitting-rooms, they are found in every parlor, a practice, by the way, exceedingly unhealthy, and which almost always does some mischief, the constant inhalation of the odor of flowers being pernicious to health. This genus furnishes us with nearly all our beautiful looking and sweet smelling species, among others the variety represented in our plate. With a good selection of them, it is possible to have one in bloom every month of the year. A rich, light soil, as a mixture of loam and peat, is the best for the garden, when a good supply of decayed leaves can be procured; if they can, they are considered by florists much the best. The true *Geranium* is well known by the extensive use made of one of its species, the *Maculatum*, in the United States, where it is indigenous. It is found mostly in moist woods, and, in fact, in almost all low grounds. The root, which is thick and fleshy, lies parallel to the surface of the ground, sending up every year a straight round stem, about eighteen inches high, which parts in pairs, of a pale green color. The leaves apparently spring from the root; they are deeply divided into three, five, or seven lobes, and are also pale green. The whole plant is thickly covered with reflexed hairs, and takes its name from the Latin, *Maculo*, to spot or stain, from the stalk and leaves being mottled with pale green spots; the flowers are large, and of a purple color; the fruit consisting of five aggregate, one-seeded capsules, attached by a beak to the permanent style, from the sides of which are separated five thin, flat awns or stiff beards, which coil up, having cast off the seed contained in a cell at the base of each. The root, which should be collected in the autumn, is, when dried in pieces of from one to three inches long and a quarter inch broad, very brittle, and easily reduced to powder. Bigelow says, that it is one of the most powerful astringents we possess, and that from its decided properties, as well as the ease of procuring it, it may well supersede in medicine many foreign articles of its class which are consumed among us. Its active properties are readily given to alcohol and water. Bigelow says, he has found it useful in a number of cases where astringents were capable of rendering service. It is particularly suited to the treatment of such discharges as continue from debility after the

removal of their exciting cause. The tincture forms an excellent local application in sore throats and ulcerations of the mouth. The dose is a drachm of the tincture, and twenty or thirty grains of the powder, and a somewhat less quantity of the extract.

There is a strange peculiarity about this tribe that has been well denominated a monkey-like habit of imitation ; one of its species apes the Ivy ; another, the Pansy ; others the Oak, Maple, &c. ; while, by another mode of copying, we have the odors of the Rose, Lemon, Musk, Fish, &c., &c. ; yet, despite all this, the experienced botanist will readily tell almost any of them at first sight. The following is a list of the different emblems :

Apple Geranium,	<i>Present preference.</i>
Cranesbill Geranium	<i>Envy.</i>
Fish Geranium,	<i>Disappointed expectation.</i>
Nutmeg Geranium,	<i>An expected meeting.</i>
Oak Geranium,	<i>Lady, deign to smile.</i>
Rose Geranium;	<i>Preference.</i>
Silver-leaved Geranium,	<i>Recall.</i>

The Primrose.

PHILLIPS waggishly remarks, that in tracing back the nativity of flowers, we are greatly assisted by the mythological writings of the ancients, for without these records we should have pronounced them all as being children of Nature ; and the relationship which this favorite flower bears to the gods would have remained unknown, as well as the history of its origin. It was anciently called Paralisos, after the name of a beautiful youth, who was the son of Priapus and Flora, and who died of grief for the loss of his beloved Melicerta, but was preserved by his parents, by being metamorphosed into this flower, which has since divided the favors of the poets with the Violet and the Rose. This is the type of the natural order, Primulaceæ. The PRIMULA VULGARIS—PRIMROSE, is in the class Pentandria ; order Monogynia. The generic name is derived from the Latin, *primus*, first, because it flowers early in the spring ; its character is—umbellets involucred ; calyx tubular, five-toothed ; corol



Primula Vulgaris
Centaurea Cyanus
Daphne Mezereum

Primrose.
Blue Bottle Centaury.
Mezereum.

salver-form, five-lobed; tube cylindric; throat open, division of corol, emarginate; capsule one-celled, with a ten-cleft mouth; stigma globular.

Our species is an evergreen herbaceous plant, perennial in its duration, highly ornamental, and bearing a pale yellow flower from March to May, often named, from its peculiar tint, the Sulphur Colored Primrose. The leaves are egg-shaped, with the largest end towards the stem, toothed and rough, with hair underneath; the flower-stalks rise from the root; the stems diverging from one another at a common point, and bearing flowers on their extremities; they are as long as the leaves; the corolla is flat. This is the theme of the English poet; it meets him on every side, by the hedgebanks and in the woods of Great Britain. It differs, in some particulars, from the *P. Farinosa*, the Bird's Eye Primrose of the United States. The leaves and roots smell like aniseed, and when dried form a most powerful sternutatory, which is the only medical use the plant subserves. Phillips says, that the Primrose always seeks the shade of hedgerows, the banks of sheltered lanes, and the borders of woods and coppices, and is but seldom found spangling the open meadow like its relative, the Cowslip. From this we should learn to place it on the banks of our wilderness wastes, and to scatter it thickly beneath the trees of the shrubbery. It will grow in almost any soil, but thrives best in a clayey bank. When transplanted in the spring, it receives a check to its flowering, which often causes it to blossom freely in the autumn. A variety occurs with double flowers of a lilac color, and it has been changed to a dingy red by rich earth being accidentally scattered over it. It is the emblem of **EARLY YOUTH**, representing the age between child and womanhood.

—Pale Primroses,
That die unmarried, ere they can behold
Bright Phœbus in his strength.

WINTER TALE.

The Blue Bottle Centaury.

ACCORDING to ancient fable, this plant was called Cyanus, after a youth of that name, whose attachment to cornflowers was so strong, that he employed his time chiefly in making garlands of them, seldom leaving the fields as long as his favorite flower was to be found, and always dressing himself in the fine blue color of the flower he so much admired. At last he was found dead in the corn field, in the midst of a quantity of Blue Bottles he had gathered, which Flora, by changing his body into them, made ever after memorials of his love. The *CENTAUREA CYANUS—BLUE BOTTLE*, is in the class Syngenesia, order Frustanea. The generic name is derived from the fabulous history of Chiron, a Centaur, who taught mankind the use of herbs and medicinal plants. It is related that he cured a wound inflicted by a poisonous arrow of Hercules, by the aid of one of the species of these plants. Its character is, calyx various, mostly imbricate, roundish ; egret simple, various ; receptacle bristly ; corols of the ray funnel-shape, longer, irregular. Our species is an ornamental annual, bearing a handsome blue flower, from June to August. It is a native of Europe, and nowhere more abundant than in the corn fields of Britain. It is naturalized in the United States. The scales of the common calyx are minutely toothed ; leaves long and narrow, with nearly parallel sides and entire, the lowermost toothed. By cultivation, of course, the hues and florets are multiplied, and it has become one of the summer favorites of the parterre. Phillips says, that it is a hardy, annual plant, that will grow in almost any soil, but it succeeds best when sown in the autumn ; for those sown in the spring seldom produce so many flowers, and it will not bear transplanting. The only care required is, to keep the plants free from weeds, and thin them when they branch too near each other.

He also gives directions for obtaining a beautiful blue, almost equal to the ultramarine, from the flowers. After collecting a quantity of them, pick out the petals or florets from the centre of the flower, which are of a darker blue than those of the outside, and pound them whilst quite fresh, in a glass or marble mortar

so as to obtain the juice ; to which add a small quantity of alum, and then put it in clean shells for use. The blue derived from the outer florets will of course be of a paler color. This plant is the fitting emblem of Delicacy. It is used only in the arts : as Diana no longer ensures success in its exhibition, it of course was found wanting when weighed in the balance, and the days of its medicinal reputation have passed away.

The Mezereon.

"Thou hast thy wish, all love to see
Thy simple bloom, Mezereon tree,
Long shalt thou hold thy gentle sway,
For when thy wreaths must fade away,
Beneath the summer's scorching ray,
Thy stems shall glow in vesture gay,
With scarlet berries, rich array."

THIS plant, long before a leaf is put forth, clothes itself in its summer robes, often even when the flowers have to be surrounded by the snow. These are of a pale rose color, celebrated for their fragrancy, and disposed in clusters, each consisting of two or three flowers, forming together a kind of spike at the upper part of the stem and branches ; at the base of each cluster are deciduous floral leaves. It rises three or four feet in height, covered with a smooth, dark grey bark, having the appearance of dead wood, and which is very easily separable. The leaves, which spring direct from the ends of the branches, are lance-shaped, about two inches long, smooth, of a pale green color, and whitish below. The fruit is an oval, fleshy berry, of a shining, bright red color, containing a single round seed. As we must give the generic character in another place, it may be omitted here. It is a native of the northern parts of Europe, in every part of which it is very abundant. The bark of the stem is the part found in the shops ; we have generally procured it in bundles of about three or four feet in length, and an inch in breadth. An alkaline principle, called *Daphnine*, has been obtained from it ; this is in prismatic crystals, grouped together, colorless, transpa-

rent, slightly soluble in cold water, very soluble in boiling ether and alcohol, and of a bitter, somewhat austere taste. The root is remarkably hot and acrid, and has long been a popular remedy for the toothache. The recent bark, when applied to the skin, will raise a blister, and even when dried will vesicate in twenty-four hours. It has been used with success in chronic rheumatism, serofulous affections, and obstinate diseases of the skin. Dr. Withering cured a case of difficult swallowing, arising from paralysis, which had lasted three years, in a month, by directing his patient to chew frequently small pieces of the root. The dose of the powdered bark is ten grains; of the decoction, from a gill to half a pint a day. To make this, boil two drachms of the bark of Mezereon with four drachms of Liquorice root, bruised, in three pints of water down to two, and strain. The leaves sometimes poison children, who are attracted by their shining appearance; the French authors say, fifteen of them will kill a Frenchman; while Pallas, that it takes thirty of the same kind even to physic a Russian. It is the emblem of a Desire to Please, being compared to an imprudent and coquetish nymph, who, in the midst of winter, arrays herself in the robes of spring.

Theory of Propagation.

As we have been giving various directions in this number, relative to the cultivation of plants, more especially to the modes of propagation by slips and layers; we will, consistently with our original plan, which was to explain as we went along, give the reasons for so doing. As we have admitted that plants were living, and to some extent, sentient beings, it may strike our readers with some surprise, when we speak so confidently of making this abstruse and puzzling subject so plain, that all can comprehend it with ease. The greatest bar to a true view of it, is the fact of our ideas of living beings being generally associated with the higher orders of the animal kingdom; and we would suppose that cutting off a man's or a dog's leg and planting them, was as likely a method of producing races of their

respected kinds, as that the same method would succeed in the case of plants. As we cannot perceive much resemblance in the higher, let us examine the lower orders of animals, and see, as the vital machine becomes less complicated, if such subdivisions ever produce any results to compare with those presented by vegetables. We find that the Sponge, an acknowledged animal, forms a bud on itself, which in time drops off and becomes a perfect animal, as will any portion that happens to become separated. Our analogy, without proceeding farther, will be concluded by instancing the Polypus, which can be divided into as many animals as it contains atoms, which last phenomenon we wish to bring distinctly before the mind, for, on a proper understanding of it, our whole subject rests. A plant can be advantageously viewed in the light of a vegetable Polypus, which in truth the conservas are, to all intents and purposes, as their buds and branches consist only of simple cells. Above this rank, the embryo leaf is the real germ of the future plant; the base representing the root; the middle portion, the first internode of the stem; and the top, the future leaves and branches. The well known fact, that leaf cuttings will strike root and grow, confirms this view of the subject. Every one of these prismatic atoms has the power of developing another like itself, which springs from its top part; this, by its ascending growth, as Gray observes, forms the second joint of the stem and the blade of the second leaf; while, by its descending growth, it can reach the soil only by sending its woody tissues down through the first joint to the same final termination in the root. This second one, of course, according to the general law, forms another upon its own summit, with its proper leaf; the wood which this generates passing downwardly, penetrating all the preceding atoms, and at length reaching the soil in the same manner. Thus the stem results from the evolution of one integral element after another, each developed from, and implanted upon the summit of its predecessor, and contributing by its wood to the increase of the common trunk in diameter, and ultimately to the extension of the roots. As might be expected from this, if marks are made at certain distances on a root, you will find these distances are not altered by growth; but if you make similar marks on a stem or branch, the distances will increase, showing that it grows its whole extent; this prevails in all exogenous plants.

Embryos, or germs, or latent shoots, exist then in every part of the plant, and on the least irritation will be developed into a state of active vegetation. Each separate branch and node of stem is a distinct individual ; so that instead of being one, as we generally recognize it, a tree is a vast assemblage of the same species, treated as an individual while the mass of stems and branches remains united, but no longer. The agriculturist is a builder of vegetable cities and towns on a vast scale, accomplishing his object by causing some of the inhabitants of one place to remove to another, where they found separate communities on their own account. His art consists of three parts : first, in using means which give the germ he intends to remove or emigrate, a separate existence ; secondly, in weaning it from the parent plant ; and thirdly, in providing for its wants until it can shift for itself.

There are three modes of multiplying plants by divisions :

The first, by layers.

The second, by scions or slips.

The third, by grafts.

In making a layer, you bend down a pliant branch without separating it from the plant, and use some contrivance to fasten it in the ground ; a slight incision is made at the spot where it is confined. The irritation that ensues is generally sufficient to occasion a small accumulation of sap, from which the germs of several roots will shoot out ; when these have acquired a sufficient power of independent existence, the connecting branch is cut, and they are thus permanently separated. In doing all this, the gardener but follows the indications which Nature points out to him, for many creeping plants thus propagate themselves without the aid of man. The lowermost branches which run on the ground, are often covered with earth, washed over them by rain, and being frequently wounded by some accidental causes, such as gravel or pebble stones, the same irritation ensues, and the same results follow that we have just described ; the connecting branch, instead of being cut, is deprived of its nourishment by the young plant, and thus rots and perishes. Laurels, and the greater number of evergreen plants, are propagated by layers. The same plan is pursued in vineyards. Comstock says, that a branch of the vine is laid under ground, and the extremity of it raised above the soil in that spot where it is wanted to produce

a new plant. If the branch be long and pliable, several plants may be made to spring from it. This is called a serpentine layer, because the branch takes a serpentine direction, being made alternately to sink below and rise above the ground, as often as it is intended that new roots and stems should spring from it. Layers are sometimes made in arches, by burying the extremity of the branch only ; the separation is afterwards made when the branch has struck root ; this mode is particularly suited to the Raspberry, and every species of brambles. The *Anaplastic* operations of modern surgery bear a slight resemblance to this plan ; they consist in covering the skeletons of noses, patching burnt cheeks, &c., &c., by taking a piece of the integument from one part of the face, generally the forehead, and filling up as they require it ; exactly resembling a tailor's mode of patching cloth, except that a small link always remains to nourish the new skin until its vessels have struck into the surrounding parts, when the connection is dissolved. There is a class of aerial roots which fall to the ground, and taking root, spring up into trees, which, in turn, send out shoots that obey the same law, and so on *ad infinitum* ; the whole still retaining their connection with the parent trunk. Of this kind is the Screw Pine, a palm-like tree, often seen in our conservatories ; the Mangrove, of the tropics, and the famous Banyan, which alone makes a forest. Humboldt managed to take to Europe a great number of rare and curious plants, by placing the layers in baskets filled with earth, instead of at once in the ground ; when ready, he cut the connecting branch, and thus had his prize in a portable form. The latter end of February, and the beginning of March, is the most favorable time for this operation. The process by slips is very similar to the other ; it is merely cutting off a branch and planting it, differing from the layer, by being separated from its parent before it is able to provide for its own wants ; thus resembling a child brought up by hand. They should be planted near the surface, in order to facilitate the sprouting of stems. The last method is by scions or grafting, in which a branch is cut off from one plant and placed in an opening made in another. This is the best mode of improving the quality of fruit ; without it, our Apple and Pear species would be poor specimens in comparison with what they now are ; of course, in a graft, the tree will bear its own species and the graft also. This

process increases the size of fruits at the expense of the seeds. The Rose Acacia, when not grafted, bears seeds; when grafted, it bears none, but the blossom is made finer. It is said to produce sometimes a change of flavor, and retard vegetation. The only care necessary to be taken in the process, is to fasten on the graft with soft ligatures, and in such a manner that the vessels of the respective barks may come in contact; the wound made is generally covered with the composition ball used for such purposes. The season for grafting is either in the spring, while the sap is ascending, or in the autumn, for that of the following spring.

PARTICULAR NOTICE.

WE are extremely grateful to the numerous friends who have expressed sentiments of such decided approbation in relation to this work, more especially to the cordial support of the Press. We find from many of their recommendations, however, that its object is not fully understood; we do not intend to confine ourselves to the Botanical descriptions of each plant, but on the contrary, divested of technicality, intend to make it a thoroughly scientific work, in all the departments of Botany. It will also give information on the cultivation of Plants and Flowers. *In a word*, it will comprise the whole science.

We give below the *free* opinions of the Press.

From the Christian Advocate and Journal, New York, Edited by T. E. BOND, M.D.

The painted specimens are really exquisitely done; and the great marvel with us, is, how the work can be afforded at the low price of three dollars per annum, or two copies to an address for five dollars. Engravings can be cheaply multiplied, but paintings must be executed separately, and without the aid of labor-saving machinery. It will give us real pleasure to announce the successive numbers of this beautiful periodical, as we have been led to think the study of Botany not only an innocent recreation, but eminently promotive of piety.

From the New York Medical and Surgical Reporter.

We have received the first number of "THE ILLUSTRATED BOTANY." This periodical is got up in a very neat form, and displays taste and judgment in its Editor, who, being a well educated Medical man, is prepared to make a work of this kind very interesting and useful to the general reader. The colored plates are unsurpassed in beauty and finish.

From the Protestant Churchman, New York.

ILLUSTRATED BOTANY.—The design of this work is admirable. It is intended to comprise scientific descriptions of the most valuable native and exotic plants, with their history, medicinal properties, &c., &c.

From the Williamsburg Gazette.

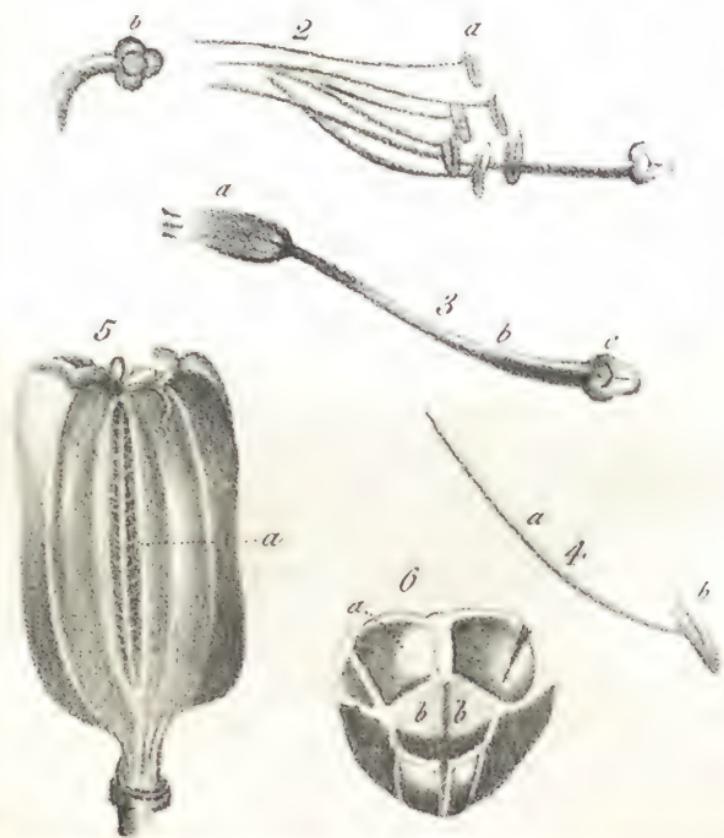
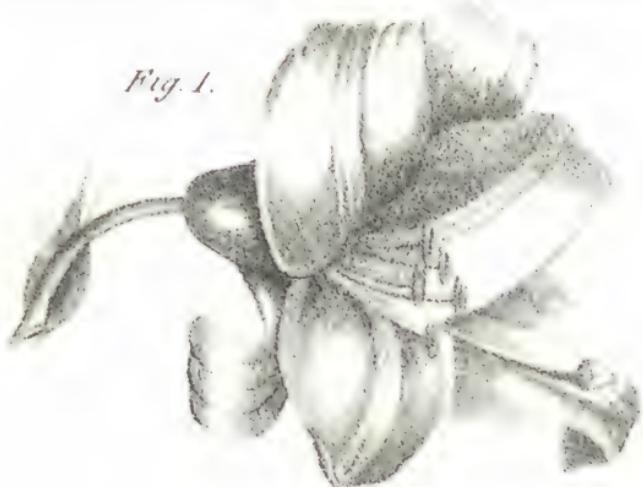
The engravings surpass any which we have ever seen. The work will be an important one to those who wish to acquire a knowledge of the interesting science of Botany. The descriptive part is got up in fine style, free from that dryness which marks many works on this subject.

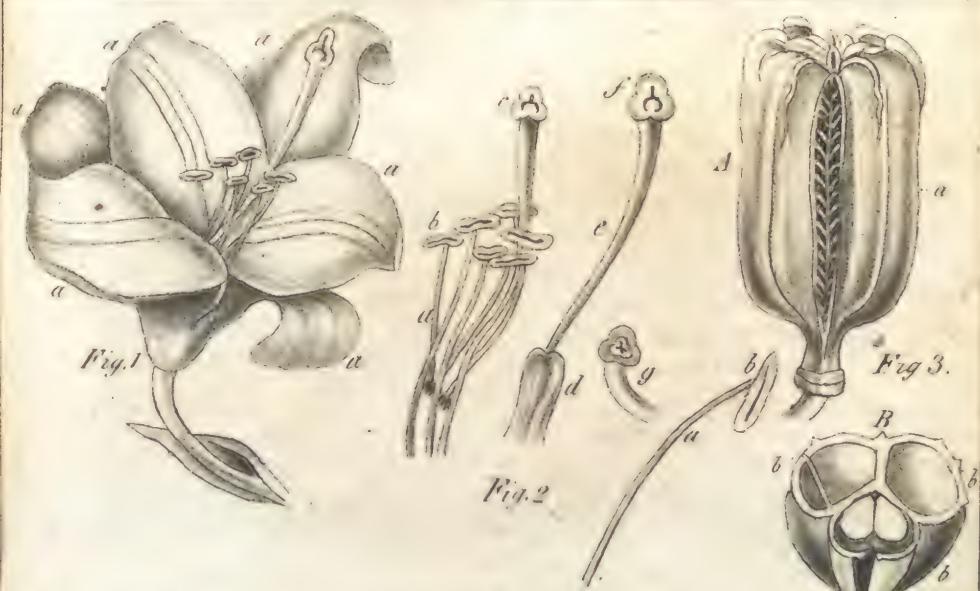
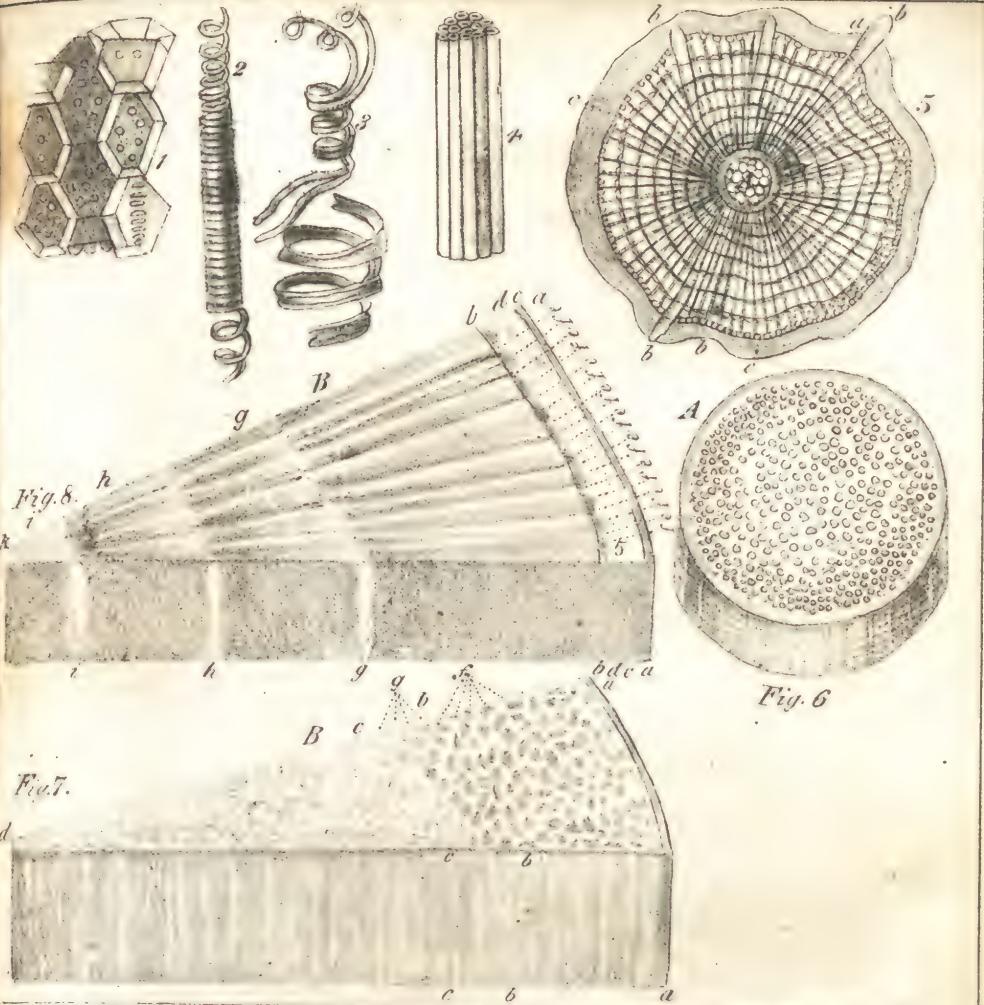
This Number contains thirteen flowers, being three or four on each plate.

LILIUM CANDIDUM.

Plate 1.

Fig. 1.





Linnæan and Natural Systems.

IN accordance with the general wish that we would enter more fully into the description of both the Linnæan and Natural Systems, we have prepared plate 3, which shows at a glance everything relating to the classification of the former. The numbers in the plate correspond to those of the Introduction, a reference to the classes of which will explain the figures. Linnæus took great pains to trace the notion of sexes in plants to the remotest periods of antiquity. He informs us that Empedocles, Anaxagoras, and other ancient philosophers, not only attributed the distinction of sexes to plants, but maintained that they were capable of perceiving pleasure and pain. Hippocrates and Theophrastus distinguished several trees in the same way; the latter of these writers affirming that the fruit of the palm will not germinate unless the pollen of the male be shaken over the female flowers previous to the ripening of the seed. Dr. Grew, of England, was the first one who did much for the spread of the theory; yet it still made little progress till the time of Linnæus, who, although he can have no title to the claim of discoverer, is universally acknowledged as the chief supporter and improver of the doctrine. He first attempted to show that vegetables are endowed with a certain degree of life; and secondly, that they propagate their species in a manner similar to animals.

"That vegetables are really living beings," says he, "must be obvious at first sight: because they possess all the properties contained in that accurate definition of the great Dr. Harvey, namely, *Vita est spontanea propulsio humorum*. Universal experience teaches that vegetables propel humors or juices; hence it is plain that vegetables must be endowed with a certain degree of life."

"Every animal must not only begin to exist, and have that existence dissolved by death, but must likewise pass through a number of intermediate changes in its appearance and affections. Infancy, youth, manhood, old age, are characterized by imbecility, beauty, fertility, dotage; are not all these vicissitudes con-

spicuous in the vegetable world. Weak and tender in infancy ; beautiful and salacious in youth ; grave, robust, and fruitful in manhood ; and when old age approaches, the head droops, the springs of life dry up, and in fine, the poor tottering vegetable returns to the dust from which it sprang."

" The term, disease, means nothing more than a certain corruption of life. It is well known that vegetables are subject to diseases as well as animals ; when over-heated, they turn thirsty, languish, and fall to the ground ; when too cold, they are tormented with the chilblain, and not unfrequently expire ; they are sometimes afflicted with cancers ; and every plant is infested with insects peculiar to its species."

Linnaeus then follows, with Dr. Harvey's idea of every living being springing originally from an egg, and he asserts that *seeds* are the *eggs* of vegetables ; and goes on to show that before the production of a seed a union must take place between the stamens and pistils of the flower, which organs, he says, " always precede the fruit ; as soon as the anthers come to maturity, which constantly happens before the maturity of the fruit, they continue to throw out their pollen as long as the flower lasts ; but decay and fall off whenever the fruit comes to perfection."

" The anthers of all plants are uniformly situated in such a manner, that the pollen may, with the greatest facility, fall upon the stigma or female organ." [The Editor would say, that the exceptions to this rule are only apparent. Flint remarks, that there are stamens which cannot reach half the height of their beloved pistil. Nature varies her arrangements so as not to be defeated in her object. These Lilliputians strive in vain to reach their gigantic Venus. As they cannot reach her, she condescendingly comes down to them. In this way the Imperial Crown, the Ancoly, and the Campanula hang down their stems, which position, so graceful in the flower, is a foresight of nature. The pollen of the stamen comes in contact with the stigma of the pistil by falling upon it ; and as soon as the mystery is accomplished and the flower fecundated, the peduncle which sustains it turns up again toward the sky. Its bower of love was concealed ; but it shows the cradle of its children. Whenever you see flowers gently inclining their bells toward the turf, you may infer that the stamens which they inclose are shorter than the pistil. And there are some, the habits of whose loves are still

more amusing ; these are the wedded dames, who, in compassion to their little husbands, slightly bend their elastic persons, contemplate them for a moment, and afterwards raise themselves erect, still bearing the marks of their yielding weakness. Such are the loves of the *Nigella*, the *Passiflora*, and the *Epilobium Augustifolium*, the pistils of which incline upon the stamens.]

Linnæus finally sums up a long series of arguments by saying that the accumulated force of all that he has adduced amounts to a full demonstration of his propositions ; and goes on to state that when the flowers are in full blow, and the pollen flying about, every one may see it adhering to the stigma, as the *Pansy*, *Bellflower* and the *Iris* will show ; that the stamens and pistils of most plants are of equal height, the former surrounding the latter, so that by the intervention of the wind, disturbance of insects, &c., the pollen may be properly scattered. They both flourish at the same time. The flowers of most plants expand by the heat of the sun, and shut themselves up in the evening or in rainy weather ; the final cause of which must be to keep the moisture from the pollen, lest it should be thereby coagulated, and of course prevented from being blown upon the stigma. Many plants that grow below water, emerge when their flowers begin to blow, and swim upon the surface until fructified, when they sink down to ripen their fruit.

We will close this part of the subject with some interesting anecdotes, which, from their nature, have rested the Linnæan doctrine on an immovable foundation ; a want of the knowledge of which has sometimes caused great injustice, as shown in the story of Baal, a gardener of Brentford, in England, told by Kay. He had sold a large quantity of the seeds of the *Brassica Florida* to several gardeners in the suburbs of London. These gardeners, after sowing their seeds in the usual manner, were surprised to find them turn out to be a different species from what Baal made them believe they had purchased ; for instead of the *Brassica Florida*, the plants turned out to be the *Brassica Longifolia*. The gardeners, upon making this discovery, commenced a prosecution of fraud against Baal in Westminster Hall. The court found him guilty of fraud, and ordered him not only to restore the price of the seed, but likewise to pay the gardeners for their lost time and the use of their ground. "Had these judges," says Linnæus, "been acquainted with the sexual

system, they could not have found him guilty, but have ascribed the accident to the fortuitous impregnation of the *Brassica Florida* by the pollen of the *Brassica Longifolia*."

Dr. Hasselquist, in a letter to Linnæus, dated Alexandria, May 18th, 1750, says : " The first thing I did after my arrival, was to see the Date tree, the ornament and a great part of the riches of this country. It had already blossomed, but I had nevertheless the pleasure of seeing how the Arabs assist the fecundation, and by that means secure to themselves a plentiful harvest of a vegetable which was so important to them, and known to them many centuries before any botanist dreamed of the difference of sexes in vegetables. The gardener informed me of this before I had time to inquire ; and would show me, as a very curious thing, the male and female of the Date or Palm trees ; nor could he conceive how I, a Frank, lately arrived, could know it before ; for, says he, all who have yet come from Europe to see this country, have regarded this relation either as a fable or a miracle. The Arab seeing me inclined to be further informed, accompanied me and my French interpreter to a Palm tree which was very full of young fruit, and had by him been wedded or fecundated with the mate when both were in blossom. Unless this is done, the trees bear no fruit. He said that he finds the male flowers full of a dew of the finest and purest kind, of a sweet and pleasant taste, resembling that of fresh dates, but much more refined and aromatic ; this was confirmed by my interpreter, who has lived thirty-two years in Egypt, and has had therefore opportunities enough of tasting the nectar of the blossoms and the fresh dates."

In the garden of M. de la Serre, at Paris, was a female Turpentine tree, which flowered every year without furnishing any fruit capable of vegetation. This was a sensible mortification to the owner, who greatly desired to have the tree increased. Messrs. Duhamel and Jussieu very properly judged that they might procure him that pleasure by the assistance of a male Pistachio tree, and accordingly sent him one very much loaded with flowers. It was planted in the garden, near the Turpentine tree, which the same year produced a great quantity of fruits that were well-conditioned, and rose with facility. The male plant was then removed, the consequence of which was

that the Turpentine tree, in none of the succeeding years, bore any fruit that upon examination was found to germinate.

There was a Palm tree at Berlin, which being the only one of its species in the vicinity, never perfected any fruit, though every year full of the flowers containing pistils. In 1749, when the tree was in full bloom, a staminate branch was sent by post from Leipsic to Berlin, a distance of twenty miles, and suspended over the barren Palm. The consequence was that the tree produced an abundance of fruit, that year, to the great amazement of the inhabitants; it came to full perfection, and many young Palms were raised from the seed.

We have said enough in relation to the Artificial Orders, without noticing them again. The Genera and Species are the same in both the Natural and Linnæan Systems; it was impossible to alter the descriptions of the Northern Light without doing harm. The names of the Genera are mostly arbitrary; some are borrowed from the older poets' fables; some from the effects they produce when taken internally; some from their situation or place; and some from individuals; and inconsistent as the method is, it was still more foolishly carried out; there is lamentably no method in the madness. The specific names fare a little better; some do profess to describe something recognizable about the plant. The name of Linnæus is given to a depressed abject Lapland plant, long overlooked; and that of Ambrosia, the food of the gods, to pig-weed.

A nomenclature, founded on the fructification, must necessarily be imperfect when taken out of its proper sphere, and made to subserve purposes for which it was never intended. The fifth class of Linnæus, for instance, contains the most deadly poisons; the most esculent vegetables; the most agreeable spices; the most acrid irritants; the most nauseous scents, and the most agreeable flavors, all combined together. In it the Potatoe and Egg plant; Peruvian Bark and Coffee; Henbane, Milkweed, Tobacco, Lobelia, Gentian, Beets, Elms, Carrots, Pepper, &c., all find a place. No one was more sensible of this than the Prince of Naturalists himself, who says, that there is a natural method or Nature's system, which we should diligently endeavor to find out. That such a system is no chimera will appear particularly, from the fact of no plant being yet discovered that has not an affinity with some others. Any one can see that the

Grasses, Mosses, Compound flowers, Mints, &c., resemble each other so much as to form natural families. In this manner a few well determined orders are easily arranged, but beyond it all is uncertainty and confusion. It has been said, with truth, that the System of Linnæus may be compared to a Dictionary, in which, though all the words in it are contained by heart, a person would still be ignorant of the language, unless to it was added a knowledge of the Grammar to teach the value of the relative terms. This Grammar must be studied in the Natural System, though whether the right one is yet discovered is a matter of some doubt, and there are not a few who confidently expect the advent of a Gould Brown. Dr. Smith remarks, in his Grammar of Botany, art. 85,—That there is scarcely a principle that can be assumed as universal, or without exception, in Natural Classification. *Number*, in the parts or divisions of each organ, proves often fallacious. *Insertion*, or the mode of connection of the several organs and their comparative situation with regard to each other, is found far less exceptionable. *Structure*, or the different forms of the same organ in different instances, is of very great moment.

Linnæus and Jussieu concur in considering as of primary importance the structure of the Embryo and the Cotyledons; the former of whom declared that the number of the Cotyledons appeared to him to afford a sure basis, or a primary source of discrimination for a Natural System. Dr. Smith states that this principle was good, but some correction of the commonly received ideas and terms became necessary since the structure and economy of seeds have been more closely investigated.

Linnæus composed a Natural System having 59 Orders. So far, however, from considering this perfect, he expressly states that he left it as a kind of model for his successors, merely to serve as a general guide.

Bernard Jussieu, who never published anything, but, like Socrates, taught in conversation, improved on the System of Linnæus, so much so as to be called the Father of this branch of the science. His nephew, M. A. Laurent De Jussieu, published his uncle's theory. This was still further improved and developed by De Candolle, since whose time it has been continually changing, perhaps for the better.

It should be remembered that Natural Classification aims at

combining in a family all plants not only resembling each other in appearance, but also in properties: for instance, the Palms of Linnæus, comprising Palms and their relatives, as the Cocoa nut, Frogslut, &c., were all characterized as Farinaceous diet; the Pomacea, as Pear, Currant, &c.—Refrigerants. It is only plants of the same family that can be grafted upon one another: a knowledge of this fact will often save useless trouble; and not only so, but prove very advantageous in other respects. It is said that in a recent voyage undertaken with a view of discovering where the celebrated La Perouse was shipwrecked, the whole of the crew was afflicted with a scorbutic complaint, which was greatly relieved by feeding on an unknown plant of the Cruciform family (which is, in all its branches, anti-scorbutic) growing on the coast of New Holland,—a remedy which was pointed out to them by the botanist attached to the expedition.

Jussieu's system has 15 classes distributed into natural series, in which are 100 orders, each defined by rather full definitions, taken in the first place from the parts of Fructification, and illustrated by secondary characters founded upon any other circumstance. As might be expected, there is at the end a large assemblage of Genera not reducible to any of these orders: though many have been since reduced, enough remains to show the imperfection of any Natural System. The following are the Classes and Orders somewhat modified; they are given to convey a general idea of his plan. Our work next year will be founded on Lindley's Natural System, which we will defer entering more fully until then.

JUSSIEU'S CLASSES.

		CLASS
Acotyledones,	- - -	1
Monocotyledones,	- -	2
	{ Stamens hypogynous,	3
	" perigynous,	4
	" epigynous,	5
	{ Stamens epigynous,	6
	" perigynous,	7
	" hypogynous,	8
Dicotyledones,	apetalous,	9
	{ Corolla, hypogynous,	10
	" perigynous,	11
	" epigynous,	12
	{ anthers combined,	13
	{ anthers distinct,	14
	{ Stamens, epigynous,	15
	" hypogynous,	
	" perigynous	
	monopetalous,	
	polypetalous,	
	declines irregular,	

SERIES OF THE ORDERS.

1. Fungi, Mushroom Tribe.	54. Plenaceæ, Persimmon Tribe.
2. Musci, Moss ".	55. Rhododendræ, Rose bay "
3. Algæ, Sea weed "	56. Ericæ, Heath "
4. Lichens "	57. Guaicancæ, Lignum vitæ "
5. Filices, Fern "	58. Campanulacæ, Bellflower Tribe.
6. Hepaticæ, Liverwort "	59. Chicoraceæ, Dandelion "
7. Naidæ, Duck meat "	60. Cinarocephalæ, Burdock "
8. Aroideæ, Arum "	61. Corymbiferæ, Boneset "
9. Typhæ, Cat tail "	62. Dipsacæ, Teasel "
10. Cyperoideæ, Sedge Grass Tribe.	63. Rubiaceæ, Bed straw "
11. Gramineæ, Grass "	64. Caprifoliæ, Honeysuckle "
12. Palmæ, Palm "	65. Araleæ, Ginseng "
13. Liliaceæ, Lily "	66. Umbelliferæ, Parsley "
14. Asparagi, Asparagus "	67. Ranunculacæ; Ranunculus "
15. Narcissi, Bulbous root "	68. Papaveracæ, Poppy "
16. Irideæ, Iris "	69. Cruciferæ, Cruciform "
17. Junceæ, Rush "	70. Caprifides, Cleome "
18. Bromeliæ, Pine apple "	71. Sapindi, Soap berry "
19. Asphodeli, Asphodel "	72. Aceræ, Maple "
20. Commelinacæ, Spider-wort "	73. Malpighiæ, Barbadoes cherry "
21. Alismacæ, Arrow head "	74. Hypericæ, St. Johns-wort "
22. Colchicæ, Colchicum "	75. Guttiferæ, Gamboge "
23. Orchideæ, Orchis "	76. Aurantæ, Orange "
24. Musæ, Banana "	77. Meliæ, Tea "
25. Cannæ, Indian reed "	78. Vites, Vine "
26. Hydrocharidæ, Tape grass "	79. Geraniæ, Geranium "
27. Aristolochiæ, Wild ginger "	80. Malvaceæ, Hollyhock "
28. Eleagnæ, Eleagnus "	81. Magnoliæ, Tulip tree "
29. Hymeleæ, Leatherwood "	82. Annonæ, Anona "
30. Proteæ, Silver tree "	83. Menispermæ, Moon seed "
31. Laurineæ, Laurel "	84. Berberides, Barberry "
32. Polygoneæ, Dock "	85. Tiliaceæ, Basswood "
33. Atriplices, Pig weed "	86. Cistæ, Rock-rose "
34. Amaranthi, Coxcomb "	87. Rutaceæ, Rue "
35. Plantagineæ, Plantain "	88. Caryophylleæ, Pink "
36. Nyctaginæ, Mirabilis "	89. Semprevivæ, Houseleek "
37. Plumbagines, Marsh rosemary "	90. Saxifragæ, Sassafras "
38. Lysimachiæ, Primrose "	91. Cacti, Prickly pear "
39. Pedicularæ, Bartsea "	92. Portulacæ, Purslane "
40. Acanthi, Acanthus "	93. Ficoideæ, Iceplant "
41. Jasmineæ, Lilac "	94. Onagræ, Willow-herb "
42. Vitices, Verbena "	95. Myrti, Myrtle "
43. Labiatæ, Mint "	96. Melastomæ, Deer grass "
44. Scropulariæ, Digitalis "	97. Salicaræ, Wax bush "
45. Solanæ, Potato "	98. Rosaceæ, Rose "
46. Boragineæ, Borage "	99. Leguminosæ, Pea "
47. Convolvuli, Convolvulus "	100. Terebinthaceæ, Sumach "
48. Polemoniæ, Plalox "	101. Rhamnæ, Buckthorn "
49. Bignoniacæ, Trumpet flower "	102. Euphorbiæ, Spurge "
50. Gentianæ, Gentian "	103. Cucurbitacæ, Melon "
51. Sapotæ, West India plum "	104. Urticæ, Hop "
52. Apocynæ, Dogbane "	105. Amentacæ, Catkin "
53. Ebonaceæ, Ebony "	106. Coniferæ, Cone-bearing "



John B. Newman, M.D.

The termination in the *aceæ* is now generally applied to the Orders, for the sake of ensuring uniformity, even where some degree of awkwardness attends its application.

The 11th, 18th and 23d classes of Linnæus have been rejected by many Botanists of high reputation, and the plants distributed by them among others; *Monogamia*, the 6th Order of the Class *Syngenesia*, and those Orders of course belonging to the rejected Classes, have shared the same fate.

The Artificial System should never be neglected by any one who wishes to understand Botany, for on a good knowledge of it depends, in a great measure, the progress made even in the Natural System. The knowledge of the greatest number of species, in the opinion of Linnæus, constituted the best botanist; it is obvious that such information would soon enable any one, without hesitation, to give a correct judgment on the relative merits of the various plans presented for his consideration. This department has been justly termed the *artis robur*, the strength or sinews of the science. As Sir James Edward Smith observes, "Species are the only distinctions, perhaps, that are indubitably natural;" and to stamp them clearly, as well as concisely, is the most important, certainly the most difficult office of the Philosophical Botanist. The name should be either a characteristic adjective, expressive of the character, aspect, color, quality and use of the species, or a substantive, not *necessarily* agreeing with the generic name, by which some circumstance in the history of the plant, or some synonym, may be recorded.

SONGS OF THE LINNÆAN TRIBES.

We were very much pleased with a little work for the Botanical student, published in England. The great charm of the book resides in its songs, which we give, confident that, although the style is so very simple and familiar, a better knowledge of the names and habits of plants, and their relations to each other, will be obtained from them than could possibly be attained in any other way. Each tribe comes before its type or chief, and sings its gathering song.

We would advise all, both young and old, to commit these verses to memory, by doing which they will plant seed that will sooner or later produce a good crop of botanical knowledge. In

our own teaching, we have found this plan by far the most efficacious, giving, with the least time and labor, the greatest results.

SONG OF THE MONANDRIAN TRIBES.

FLOWER of the Ocean, though Nature refuse
Bright tints to thy bloom or fragrant dews,
Salicornia we name thee our chieftain's pride,
And we honor thee still for virtues tried.

Child of the Ocean, thy lowly form
We will follow alike through sunshine and storm,
Our chieftain's crest is thy simple flower,
And thy name is our watchword in every hour.

SONG OF THE DIANDRIAN TRIBES.

THE *Speedwell* flowers from hill and dale,
The *Salvia* bright and the *Privet* pale,
With fragrant grass we bear in hand,
For the lady who leads our gallant band.

Fair flowers should deck fair lady's head,
And balmy sweets in her path be spread ;
Oh noble lady, refuse not thou
The wreath we place on thy honored brow.

SONG OF THE TRIANDRIAN TRIBES.

THE *Crocus* is ours with its petals of gold,
For us does the *Iris* her banners unfold,
We clothe the green hill and the verdant dell,
And the Shepherd loves in our land to dwell,
His flocks in our boundless pastures he feeds,
And his cattle graze in our countless meads.

Princess, our homage to thee we yield,
And hail thee as Queen of the forest and field.

SONG OF THE TETRANDRIAN TRIBES.

THOU to whom our vows belong,
Princess, listen to our song,
A golden couch we spread for thee,
With clustering heaps of *Galium* flowers,
The *Shepherd's Staff* shall be our spear
To guard thee in thy noontide bowers.
The scented *Woodwoof*, while we sing,
To thy honored couch we bring,
The woodland *Cornel's flowering bough*
We bind around thy snowy brow.

SONG OF THE PENTANDRIAN TRIBES

Oh talk not of Araby's spice-scented gales,
Come wander awhile in our own fertile vales,
Sweet blossoms are springing wherever we tread,
And the *Woodbine* is hanging its wreaths overhead.

Its graceful boughs by the night winds are bent,
And how sweetly they give out their fragrant scent.
Say canst thou envy Araby now,
Or ask for a garland to twine round thy brow?

Oh talk not of India's rose-hung bowers,
And the hues of rainbow-tinted flowers,
Look thou on our rich and varied store,
And envy the gardens of Gul no more.

SONG OF THE HEXANDRIAN TRIBES.

FAIR blossoms o'er thy path we fling,
Narcissus, peerless flower of spring,
And the *Vale Lily*, lo! we bring.

With *Calamus* we strew the bower,
But *Bethlehem's Star* shall be the flower
To guide us through the darkest hour.

SONG OF THE HEPTANDRIAN TRIBES.

WE turned with untiring zeal to explore
The tangled wood and the Highland Moor,
And there the hermit flower was seen,
The lone and the lowly *Wintergreen*.
Chief of a single tribe, to thee
We bring the prize on bended knee.

SONG OF THE OCTANDRIAN TRIBES.

LIKE bold Robin Hood and his merry men,
In the good green wood 'tis our joy to roam,
We deepen the shade of the forest glen,
And our branches we wave round the peasant's home.

A feast of sweet berries to cheer him we spread
When he comes in our sylvan shade to recline,
The *Heather* we give for his rustic bed,
And the *Maple* bowl for his honeyed wine.

We enrich the young shepherds who fly to our bower
With many a prize for their favorite maids,
And we crown our gifts with the *Truelove* flower,
Which unfolds its green leaves in our forest glades.

SONG OF THE ENNEANDRIAN TRIBES.

CHIEFTAIN for thee, on the slender spear,
The crown of *Butomus* flowers we rear,
By the sedgy streams of the deep green vale,
We dwell with the summer nightingale.

She flies from India's sultry groves,
To tell us sweet tales of her Eastern loves.
When the latest notes of her liquid song
Are floating the woodland valleys among.

The buds of the *Roscale* flowers expand,
As if waked to life by the music bland ;
Princes receive from the nymphs of the spring
The *Butomus* blossoms thy votaries bring.

SONG OF THE DECANDRIAN TRIBES.

Oh, *Arbutus* tree,
We pluck from thee
The spray that forms our chieftain's crest,
With thy berries bright
As the rosy light
The sun gives out when he sinks in the west.

Through enchanted groves,
Where the poet roves,
In Araby's fair and sunny clime,
He sees not a gem
On its golden stem,
More lovely than this in its season of prime.

SONG OF THE DODECANDRIAN TRIBES.

In desert spots and chalky dells,
The pale *Reseda* meekly dwells,
Yet hid within her petals lie
Tints that with Ophir's gold may vie,
The princely banner proudly spread
Above the courts where monarchs tread,
Gleaming with many a glorious hue,
From this pale flower its splendor drew.

Let none behold with cold disdain,
The frailest blossom of the plain,
Let none the simplest being scorn,
Though humbly placed and meanly born,
The lowliest thing may have the power
To cheer and bless the loftiest bower ;
Queen of the Meadows, thee we greet,
And lay our tribute at thy feet.

SONG OF THE ICOSANDRIAN TRIBES.

POMONA, from the vintage bowers
We come with mingled fruits and flowers,
The *Strawberry* from its lowly bed,
We pluck before thy shrine to spread,
With the *Service wild*, and the Woodland *Plum*,
So thy faithful votaries come.

From the glowing *Raspberry*'s wavering stem
We gather many a ruby gem,
We rifle the boughs of the *Cherry tree*,
To find an offering fit for thee,
The sweet *Ulnaria*'s fragrant bloom,
We gather to form a regal plume.

And o'er these proffered gifts we throw
The *Roses* that around us grow,
The matchless *Rose*, whose sweet perfume
Outlives its fair but fleeting bloom,
And breathes around the faded flower
The odors of its opening hour.

SONG OF THE POLYANDRIAN TRIBES.

CHIEF of our tribes, to thee we bring
Meet offering for a sylvan king.

As thy royal diadem,
The *Clematis* is wreathed for thee,
Enriched with many a ruby gem,
From the glowing *Peony*.

Her gift, the azure *Pasque flower* sends,
A blossom fit for courtly bowers,
Her aid the bright *Papaver* lends,
And blends it with her scarlet flowers.

And golden *Caltha* cups we bring
To pledge thee in the flowing tide,
And *Lilies* from the crystal spring,
And *Globe flowers* from the mountain side.

SONG OF THE DIDYNAMIAN TRIBES.

COME, honey bee, with thy busy hum,
To our fragrant beds of wild *Thyme*, come
And sip the sweet dew from the *Betony*,
The *Marjoram* and the *Euphrasy*.

Come, honey bee,
We spread for thee

A rich repast in wood and field,
 And a thousand flowers
 Within our bowers,
 To thee their nectared essence yield.

SONG OF THE TETRADYNAHIAN TRIBES.

BLOSSOM of the time-worn tower,
 Fragrant *Wall-flower*, thee we bring
 To be our chieftain's chosen flower,
 And round his path the odors fling,
 Emblem of love, sincere and warm,
 And friendship that survives the storm.

SONG OF THE MONADELPHIAN TRIBES.

WE come, the highway sides to grace
 And strew the banks with *Malva* flowers;
 With gay *Geranium*'s varied race
 We have decked the lanes and woodland bowers.
 On the marsh, in the shade of verdant hills,
 Her blossoms *Althea* delights to rear,
 And deep in her green retreat distils
 The healing balm to the shepherd dear.
 Boldly we brave the blast and storm,
 Unharmed by Ocean's tempestuous roar,
 While fair *Sanatera* erects her form,
 And hangs her wreath on the sandy shore.

SONG OF THE DIADELPHIAN TRIBES.

Our splendid sails, like the butterfly's wing,
 Are gay with the rainbow's hues,
 And our silvery keels sweet odors fling,
 As they sweep the morning dews.

The treasures of gardens and cultured plains,
 We bear on our gallant prows,
 Feasts for the flocks and the shepherd swains,
 And plumes for regal brows..

Come taste our sweets, come wreath our flowers,
 While the sunbeams gild our sails,
 For we fold thee wherever the dark cloud lowers,
 And tempt not the stormy gales.

SONG OF THE POLYDELPHIAN TRIBES.

Come follow *Hypericum*'s golden star,
 It will lead to where happiness dwells afar,
 With nature in peaceful shades.

It will lead to the green hill's flowery brow,
Or by hedgerow paths in the vales below,
Or through turf-y forest glades.

Pluck not the flowers like the Saxon maid,
Nor anxiously watch, if they flourish or fade,
By the moon of a midsummer night;
Nor aloft, as a spell, hang her tassels of gold,
Like the Cambrian swain, nor like Druids of old
Bid them dwell in mystic rite.

SONG OF THE SYNGENESIAN TRIBES.

THOUGH we boast not Triandria's corn and grass,
Yet our *Thistles* feed the laboring ass—
And the small birds rejoice in the leafy bowers,
As they feed on the seeds of the *Groundsel* flowers.
With us the cerulean *Cyanus* is seen,
And our own fair *Daisy* decks the green,
And the *Succory* opens its azure eye,
Beneath the light of the summer sky.
Fair are our flowers, but yet more fair
Are the seeds that lightly float on the air.
When the fading blossom has lost its grace,
A feathering down supplies its place,
And wafts its seed on the passing gale
To its rightful home on hill or vale.
Those winged seeds are thickly stored,
In the urn of the purple *Salsify*,
The *Coltsfoot* keeps a secret hoard,
And in the *Camomile* cups they lie.
Chief of the woodlands and queen of the meads,
Accept our flowers and our downy seeds.

SONG OF THE GYNANDRIAN TRIBES.

In the quiet shades
Of our forest glades,
The fair *Epipactis* her blossom unfolds,
And the *Orchis* race,
Our field banks that grace,
The wandering shepherd with wonder beholds.

In our pastures green
Ladies' tresses are seen,
In our woods *Cypripedium*'s purple flower;
And *Sistera* there,
Her nest doth prepare,
And *Herminium* brings her musk to our bower.

With insects' gems,
On their verdant stems,
The *Ophrys* tribe in our borders we see,
Queen of the flowers,
These treasures are ours,
And we bring them with loyal hearts to thee.

SONG OF THE MONŒCIAN TRIBES.

FROM the flowing stream, we bring to our chief,
Sagittaria flowers with arrowy leaf;
And the reed-like *Typha*, the sceptre fair
That our rural sovereign delights to bear,
Euphorbia we bring from the wild sea shore,
And the sedging *Carex* from land and moor.
Not these alone are our treasured store,
For our *Beech* masts fatten the forest boar.
We have Cameron's *Oak*, and McGregor's *Pine*,
And Buchanan's *Birch* to yield us wine,
And Highland *Hazel* of bold Colquhoun,
While Mackintosh brings the *Box* for a boon.

SONG OF THE DICŒCIAN TRIBES.

PRINCESS, we lay on thy floral shrine,
Light wreaths the graceful *Humulus* weaves,
Our northern *Myrtle* with these we twine
The sweet *Myrica*'s fragrant leaves.

The dark festoons of the *Tumus* cling
To the silvery *Willow*'s bending spray,
Whose blossoms like down from the cygnet's wing,
Shed a golden light on the vernal day.

The pearly tufts of the *Mistletoe*,
With the evergreen *Buxus* leaves we bind,
And the *Aspen*'s slender boughs that throw
Their trembling leaves to the summer wind.

In the battle's shock our tribe has stood
Renowned for many a valorous deed,
And our faithful bows of the *Yew-tree* wood,
Shall guard our queen in the hour of need.

SONG OF THE POLYGAMIAN TRIBES.

THE silvery *Purslane*'s simple flowers,
Are all the humble prize we claim ;
We have no roses in our bowers,
No fragrant blossoms known to fame.



Fritillaria Imperialis
Papaverum Rhoeas
Chionodoxa

Crown Imperial.
Red Poppy
Sky Flowers.

Unknown and unadmired, our race
Springs up, and blooms and fades away,
And few have sought our resting-place,
Or watched our buds from day to day.

Yet in the simplest blossoms dwell
Such proofs of power and wise design,
As to the wondering spirit tell,
The hand that formed them is divine.

SONG OF THE CRYPTOGAMIAN TRIBES.

CHIEFTAIN, from our varied store,
What tribute shall our tribes provide ?
We have gems on Ocean's shore,
And beneath the flowing tide,
And many a precious treasure laid
On the mossy bank in the forest glade.

We will bring our gallant chief
The waving locks of *Maiden-hair*,
And *Fragile* with graceful leaf,
Fit for lovely dames to wear,
And the *Royal Osmund*'s palmy bough.
A plume that suits a warrior's brow.

Chieftain, to thee' we duly bring,
Our countless gifts from land and sea,
And lo ! to crown our offering
The nectared draughts we pour to thee,
Peziza's lowly daughters bear,
In their ruby cups so rich and rare.

The Crown Imperial.

THE FRITILLARIA IMPERIALIS—CROWN IMPERIAL, is in the Class Hexandria ; Order Monogynia. The generic name, *Fritillaria*, is from *Fritillus*, the Latin for dice-box, from the spotted color of the petals, or, perhaps, some other fancied resemblance. Its characters are : coroll inferior, six-petalled, bell-form, with a nectariferous cavity above the claw of each ; stamens the length

of the corol ; seeds flat. The specific name, *Imperialis*, is derived from its commanding deportment and brilliant colors. Flowers under a leafy crown, nodding. Leaves, lance-linear, entire. Some consider it the emblem of MAJESTY, others of PRIDE. Dr. Langhorne says :

From Bactria's vales, where beauty blows
Luxuriant in the genial ray,
Where flowers a bolder gem disclose,
And deeper drink the golden day.

From Bactria's vale, to Britain's shore,
What time the Crown Imperial came,
Full high the stately stranger bore
The honors of his birth and name.

In all the pomp of Eastern state,
In all the Eastern glory gay,
He bade, with native pride elate,
Each flower of humbler birth obey.

In the *Flora Historica*, Phillips gives the history of this flower at full length. We will copy his article. The Crown Imperial, says he, is one of the flowers that was first introduced into England in the time of Shakspeare. Gerard, who, in his day, was the principal writer on plants, tells us, in 1597, that he had then plenty of the Fritillary in his garden, at Holborn, but he calls it a rare and strange plant. It was first sent from Constantinople, into the Christian countries of Europe, by Clusius, who forwarded it first to Vienna, in the year 1576, stating it to be a native of Persia, growing in the woods of that country. It was, therefore, for some time, called *Lilium Persicum*, Persian Lily ; but as there was already another Persian Lily growing in the European gardens, Alphonsus Pauciuis, Physician to the Duke of Florence, when he sent a drawing of it to M. John de Brancion, named it *Corona Imperialis*. Madame de Genlis thinks the name originated from the celebrated Guirlande de Julie, Chapelain having, under the painting of this flower, written a poor metamorphosis in compliment to Julie, who was a great admirer of Gustavus Adolphus, king of Sweden, who lost his life in the battle he gained in the plains of Lutzen. The poet says, that had this monarch gained the Imperial Crown, he would have offered it with his hand, to Julie ; but as the fates have

metamorphosed him into this plant, it is given to her under the name of *Couronne Impériale*, which title appears to have been adopted in all the European languages. Modern Botanists have since bestowed the name of *Fritillaria* on a family of plants, of which this is, from deportment and brilliancy of coloring, the chief.

The Lily's height bespoke command,
A fair imperial flower,
It seemed designed for Flora's hand,
The sceptre of her power.

In the Turkish language, this flower is called *Tusai* or *Tuschai*, as well as *Turfani* or *Turfanda*; and as it was obtained from the Turks under this name, it ought, in justice, to have retained its original appellation.

The Lily of the turbaned countries towers above all the flowers of our vernal parterres, throwing up its tall stem amidst the dwarf flowers of April, like the tall palm amidst trees, or a pagoda arising out of a Chinese town. At the end of its stem is supported a circle of Tulip-shaped corollas, turned downwards, which have the appearance of so many gay bells, the stigma answering for the clapper. The whole being crowned by a coma, or tuft of green leaves, gives it a singular and agreeable effect; and when the bulbs are suffered to remain two or three years in the earth, which should be a light, dry soil, free from manure, they frequently send up a stem that carries two or three whorls of pendulous flowers above each other: it is then called the Triple Crown.

Numerous varieties of this flower have been raised from seed, by the patient perseverance of the Dutch florists; but the most desirable varieties are those of the gayest colors, such as the bright yellow and brilliant red, as the dingy colors and variegated kinds make less show in the garden. This Imperial flower is not without its body-guard, to keep its admirers at a proper distance, for it possesses so strong a scent of the fox, combined with that of garlic, as to ensure its protection from meddling fingers, and its safety from the saloon vase. [And also from the writings of the poet; notwithstanding its extremely beautiful appearance, this elegant looking flower, on account of the strong disagreeable odor of its blossoms, is universally disliked. Ben Jonson men-

tions it in a nosegay, composed of almost every flower in the garden :

Bring Cornflag, &c., &c., &c.

Bring Crown Imperial, &c., &c.

Evans remarks :

Then heed ye not the glittering gem,
That gleams in *Fritillaria's* diadem.

This is about all.—ED.] It is the same property of the plant that hinders its being rifled of its nectareous juices, which are not only rejected by the bees, but refused by every kind of insects. But the beauty and splendor of this magnificent flower will ever secure it a situation in pleasure grounds, and it is equally adapted to decorate the centre of large flower borders, or to intermix with dwarf shrubs in more sylvan scenes ; and it is one of the few flowers which, like noble personages, is seen to the best effect when planted singly.

The more closely we attend to the natural history of plants, the more surely are we delighted with the works of Nature. To the Crown Imperial a large flower is bestowed, that has not the gift of closing its petals like the Tulip, and most other flowers, to secure the parts of fructification from the wet and inclement season in which it flowers ; but to counteract this apparent inconvenience, a pendulous position is given to the corolla, which effectually protects the important parts of the flower, like a bell-glass, until impregnation has taken place, when the peduncles change to an upright position, in order to facilitate the ripening of the seed. The singularity of the nectary or honey-cup of this flower is too peculiarly conspicuous to have been overlooked by the curious ; it is a white glandular cavity at the base of each petal ; and as long as the flower remains in vigor, a large drop of limpid nectareous juice is hung to each nectary ; and thus we are struck with the important uses of the petals, in addition to that of a covering to the stigma and anthers, for they appear to be organs by which the *polarised primitive matters are directed to their evolution, and to their different attractions.* [These italics show a specimen of senseless jargon in which scientific men now-a-days rarely indulge. It arises from considering *Electricity* as the source of life !—ED.] We have consulted some of the first botanists of the age on the use of the nectareous juice

in nourishing the parts of fructification, and assisting the impregnation of the seed, and we have met with that diversity of opinion which could hardly have been expected on a subject that seems so clearly developed. A lady experimenting on the Crown Imperial for this purpose, "robbed the petals of this delicate fluid about 10 o'clock in the morning, and every evening, during which period it became usually replaced in the degree of about one-third the natural quantity, when suffered to remain undisturbed. Those bells from which the honey was taken regularly every morning and evening, did not produce seed; two bells, irregularly robbed, formed poor seed-vessels; while those on the same plant, remaining in the natural state, brought the seeds to perfection."

As it takes six years to obtain flowering bulbs from the seeds of the Crown Imperial, it is seldom propagated in this way. Those who are disposed to exercise their patience in this way, and raise varieties from the seed, have only to follow the directions which we will give for increasing Tulips, and there is no fear but success will attend the operation.

The Crown Imperial has a large, round, scaly root, that throws off young offsets, by which it is generally increased in our gardens, but it is more frequently obtained from the shops which import it from the Netherlands, and from Holland. The roots should be planted at least six inches deep, and not removed oftener than every third year, when the young plant may be separated from the parent bulb, and planted in a soil as already noticed, the strongest of which will flower the following spring, if removed at the proper season, which is about the beginning of July, when the stalk is decayed.

As our flower gardens and pleasure grounds in the United States increase, this plant rises into notice; its odor will of course prevent its being cultivated where the collection is small and confined. Where there is sufficient room, however, it will always be indispensable; and although in a Republic, we shall annually see the Crown Imperial performing its reign in quiet splendor, unconscious of the cares that attend other crowns.

The Ashwort.

THIS plant belongs to the Class Syngenesia : Order Polygamia Superflua : in the Natural System to the Order Compositæ, the Linnæan name for which was Columniferæ, from *Columna*, a pillar, and *fero*, to bear, consisting of plants whose stamens and pistil have the appearance of a column in the centre of the flower. This Order furnishes a choice collection of herbs, both annual and perennial, shrubs and trees ; they are very different in size and height ; pretty thick and deciduous, of a beautiful appearance, with an erect stem, which is formed by its branches and foliage into a round head. The wood is, in general, soft and light ; the stems cylindric ; and the young branches, though commonly of the same figure, are sometimes angular. In many plants of this Order, the flowers generally open about nine in the morning, and remain expanded until one in the afternoon. The calyx sometimes single, at others double ; petals from four to nine, five being the prevailing number ; stamens from five, upwards ; anthers roundish ; seed-vessel generally a capsule, sometimes a pulpy fruit of the berry or cherry kind. The plants all mucilaginous and lubricating.

The *Cineraria—Ashwort*, takes its common name from the meaning of its Latin one. The genus is characterized by—calyx simple, many leaved, equal; egret simple. There are three species common in the United States.

The CINERARIA HETEROPHYLLA rises to the height of about eight inches ; it has a peculiar hairy appearance. The leaves which proceed directly from the root, have long stalks, are of an oval shape, diminishing into a long narrow base ; many times these shapes vary ; those from the main stem continue about the same width most of the length, deeply cut, with the divisions ranged opposite each other on the mid-rib. The flowers which are yellow, and bloom in May, grow in flat bunches, the stalks somewhat like the bracts of an umbrella, but spreading from different heights.

The C. CANADENSIS is very much like the other, with blue-formed clusters. There is a Southern species blooming in August, but of very little account. In England, this plant is a great

favorite, and its flowers highly prized ; it is termed the Sky flower, and is the emblem of HOUSEHOLD VIRTUE.

The enamored of the sun,
At his departure hangs her head and weeps,
And shrouds her sweetness up, and keeps
 Sad vigils, like the cloistered nun,
Till his reviving ray appears,
 Waking her beauty as he dries her tears.

MOORE.

The Poppy.

WE are told that the ancients, who regarded sleep as the grand physician and the great consoler of human nature, crowned the god of Sleep with a wreath of Poppies. The palace of Somnus was represented as a dark cave, into which the sun's rays never entered ; at the entrance grew Poppies and other somniferous herbs ; the Dreams watched over his couch, attended by Morpheus, his prime minister, holding a vase in one hand, and grasping Poppies in the other. It is of course the emblem of SLEEP.

" From the Poppy I have ta'en
 Mortals' balm and mortals' bane !
 Juice, that creeping through the heart,
 Deadens every sense of smart ;
 Doomed to heal or doomed to kill,
 Fraught with good or fraught with ill."

'This flower was anciently consecrated to Ceres, because it was the first food the disconsolate goddess was prevailed on to taste, after the loss of her daughter, Proserpine. The PAPAVER RHEAS—SCARLET POPPY, a native of Europe, but naturalized in our own country, there, as here, beautifully mingles its splendid blossoms with our sustaining corn ; and it is said, when found profusely scattered, to be a proof either of poor land or bad husbandry :—

There nodding Poppies mock the hope of all.

But if the defendant may be allowed to speak for itself, we shall hear a different story :

That Ceres with my flower is grieved
Some think, but they are much deceived,
For where her richest corn she sows
The inmate Poppy she allows,
Together both our seeds doth fling,
And bids us both together spring.

The ancients had this opinion, for seeds of the Corn Rose, as it was called, were offered up in the sacred rites of Ceres, to ensure the prosperity of the corn. Phillips says, that where it abounds, it denotes a light and shallow soil, and it is singular, that in England, when such land is ploughed up in the spring, when there can be no Poppies to scatter their seed, and although it be where none have ever been seen, yet it is a great chance that such lands shall not be covered with these plants during the summer. He frequently observed this phenomenon when lands were first broken up, and even in situations distant from other corn lands saw the plains glow with the red petals of the Wild Poppy. The Persians still continue to sprinkle the seeds of Poppies on their rice and wheaten cakes, which is also frequently practised in Germany, where the seeds are given as a cooling diet to singing birds. The stem of this plant is covered with straight spreading hairs, the leaves deeply gashed, the parts ranged opposite each other. It has a large number of flowers. The capsules are sleek, and nearly globular. It blossoms in June. We saw a number of these carefully planted in the Cemetery at Sag Harbor last summer, round an infant's grave, by the bereaved parent, mournfully and gracefully hanging down their heads to express extreme sorrow.

The generic name is derived from pap or papa, the food of babies, because the flowers or fruit was formerly, and the custom is not in disuse, mixed with it when given to children for the purpose of procuring sleep. It is in the Class Polyandria: Order Monogynia. The characters are—calyx two-leaved, caducous; coroll, four-petalled; stigma, a broad disk, with radiating lines; capsule one-celled, dehiscent by pores under the permanent stigma. Every one of the species is able to afford the Opium of commerce in a greater or less quantity; but the plant from which it is commonly derived, is the **PAPAVER SOMNIFERUM** —**WHITE POPPY**, which has two varieties, derived from the color of the seeds.

" Within the infant rind of this small flower,
Poison hath residence and medicine power,
Oh mickle is the powerful grace that lies
In herbs, plants, stones, and their true qualities.
For naught so vile that on the earth doth live,
But to the earth some special good doth give,
For naught so good that strained from that fair use
Revols from true birth stumbling on abuse."

This is an annual plant, with a smooth, erect, whitish, and nearly round stem, varying in height from two to six feet, according to circumstances and favorable situation ; it is sometimes branching. The leaves are quite large, gashed, and closely embrace the stem, upon which they are alternately disposed ; they are glaucous or clothed with a sea-green mealiness, which is easily rubbed off. The flowers are very large, of a silver-grey color, tinged with violet at the base, and come out in June ; the flower-cup, which is composed of two leaves, falls when the blossoms expand. The petals are four in number, subject, however, to the multiplication which is always the effect of cultivation. The capsule is very similar to the species we have already described ; it is in it that its virtues chiefly reside ; although every part of the plant abounds in the opaque milky juice, all of this does not contain morphine. Like some other plants we have mentioned, the Poppy does not seem poisonous until a certain age, for in Persia, when they thin the plants, the young ones are used as pot-herbs ; and we have the authority of Hippocrates for believing them nutritive. Linnæus considered the Poppy a native of Europe ; at any rate, it grows wild in almost every part of it but England ; cultivated there to a great extent, not only for its Opium, but the bland oil its seeds contain, which is used in painting, making soap, and adulterating Olive oil. Its principal cultivation is confined to the East, Turkey, Egypt, the East Indies and other parts of Asia, where Poppy fields can only be compared to our corn fields. The account of its culture by Kerr is the same as that of Discorides, given eighteen hundred years ago. The field being well prepared by the plough and harrow, and reduced to an exact level superficies, it is then divided into quadrangular areas of seven feet long and five feet in breadth, leaving two feet of interval, which is raised five or six inches, and excavated into an aqueduct for conveying water to every

area, for which purpose they have a well in every cultivated field. The seeds are sown in November and October. The plants are allowed to grow six or eight inches distant from each other, and are plentifully supplied with water; when the young plants are six or eight inches high, they are watered more sparingly; but the cultivator spreads over all the areas a great quantity of manure, mixed with nitrous earth which he has scraped from the highways and old mud walls. When the plants are near flowering, they are watered profusely to increase the juice. When the capsules are half-grown, no more water is given, and they begin to collect the Opium. At sunset they make two longitudinal double incisions upon each half-ripe capsule, passing from below upwards, and taking care not to penetrate the internal cavity of the capsule. The incisions are repeated every evening until each capsule has received six or eight wounds; then they are allowed to ripen the seeds. The ripe capsules afford little or no juice. If the wounds are made in the heat of the day, a cicatrix would have been formed too soon. The night dews, by their moisture, favor the exstillation of the juice. Early in the morning, old women, boys and girls collect the juice by scraping it off the wounds with a small iron scoop, and deposit the whole in an earthen pot, where it is worked by the hand in the open sunshine until it becomes of a considerable spissitude. It is then formed into cakes of a globular shape, and about four pounds in weight, and laid into little earthen vessels to be further exsiccat-ed. These cakes are covered over with the Poppy or Tobacco leaves, and dried until they are fit for sale. They frequently adulterate it with an extract of the plant procured by boiling, and various other substances which they keep secret.

Another method is, to make an extract from those capsules which have refused to yield their juice by exudation. Both methods were known to the ancients. Newman was informed at Genoa and Leghorn, by the Turks, that in some places the heads, stalks and leaves are committed to the press together, and that this juice inspissated affords a very good Opium.

It was formerly supposed that the first preparation, by exudation, which is far the most valuable and powerful, was never sent here, being consumed in the countries that make it. The experiments of the English cultivators have proved that this is a mistake, and that we really receive the strongest kinds is beyond

doubt. Wood and Bache say, that commerce is supplied with Opium chiefly from Hindostan, Persia, and the Asiatic dominions of Turkey. When good, it has a strong, peculiar, narcotic odor, and a bitter, somewhat acrid taste. When long chewed, it excites much irritation in the mouth, and even blisters when unaccustomed to its use. The color is of a reddish brown or deep fawn, the texture compact and uniform, its specific gravity 1.336. When drawn over paper it leaves an interrupted trace of a light brown color. It is often soft in the interior of the mass, and is in this state tenacious; but when exposed to air it generally hardens, and ultimately becomes brittle, breaking with a uniform shining fracture, and affording, when pulverized, a yellowish brown powder, which becomes adhesive upon a slight elevation of temperature. It readily inflames upon the application of a lighted taper. It is partially soluble in water, alcohol, ether, wine, vinegar, and lemon juice, to all of which it imparts a deep brown color. We are told that when it is triturated with hot water, five parts out of twelve are dissolved, six suspended, and one remains unaffected. This is viscid and tenacious, presenting characters strongly analogous to those of Caoutchouc.

MORPHINE and NARCOTINE are the two most important principles obtained from Opium; the former of which is considered to possess nearly all its good properties without the injurious, and is now universally used; and to be found either in the form of Sulphate or Acetate in all our shops. Opium is a stimulant narcotic; and as well known, perhaps, as the remedy of lovesick stupids, as for its valuable medicinal properties. Like most, in fact all poisons of its class, a very large dose is less fatal than one just sufficient to produce death. About six years ago we carefully weighed out sixty grains or one drachm of Opium, wrapped it in paper, and placed it in our pocket. We retired early, perhaps four hours afterwards, having taken tea in the interval; we awoke covered with a cold, clammy sweat, and gasping respiration, and there was enough consciousness still left to be aware of the real cause of all this, which darted with terrible conviction across our mind; awakening our brother who slept with us, and who we must say behaved very lazily, we dispatched him for fifty grains of Ipecac, and to alarm the house. He did both, and we remember little more for several days afterwards, a state of low delirium having supervened. We found

that on that eventful evening, a peculiar clicking noise was heard throughout the house, unaccountable to every one, which must have proceeded from our respiration. By the bed-side the contents of the stomach were discovered with the Opium. It must have been ejected immediately after retiring ; which was the means of saving us. Zinc, the sulphate of which (white vitriol) should be given by the teaspoon-full, and Ipecac used in the same way, and with as great quantities of warm water as can be given, are the best remedies ; the stomach pump is an invaluable auxiliary. Constant friction should be kept up over the whole body with warm hands. Our own escape, however, despite the theories of science, we firmly ascribe to Providence. We found none of the exhilarating effects produced from it, for which it is taken by the Mahomedans and Hindoos, nor do we think that such effects uniformly follow its exhibition. For information on which subject we must refer to the Confessions of an English Opium Eater.

A test to ascertain its presence is given by Dr. Hare, founded on the fact, that *meconic acid* forms a red salt with the *peroxide of iron*. He precipitated the *meconate of lead* by the addition of a few drops of a solution of the *acetate of lead* to the suspected liquid : applies to the precipitated *meconate* by means of a dropping tube, about thirty drops of *sulphuric acid*, by which the *meconic acid* is separated ; and finally adds in the same way a solution of the *red sulphate of iron*, which gives the striking red color of the *permiconate* of that metal. *By this mode, a drop of laudanum can be detected in six fluid ounces of water !*

Phillips says, to show that Poppies were cultivated to ornament the royal gardens of Rome, in the early days of that city, we have only to call the attention of our readers to the interview which took place between Tarquin the Proud, and the messenger who was sent by his son from the city of Gabii. The Carnation Poppy, which adds so considerably to the gaiety of our gardens during the months of July and August, and which is so much neglected in England and cultivated in France, is only a variety of the P. Rheas. In its double state it is a flower of great beauty, both on account of its crumpled and delicate texture, elegance of shape and variety of coloring, some being perfectly white, others plain rose, blush-scarlet and crimson, and on others the pencil of nature seems to have blended the dyes in the

most finished of coloring, with petals thin as gossamer, and double as the rose. This flower bursts out of its confinement at maturity, with considerable force, throwing off the two-leaved caducous calyx to some distance, and astonishing the beholder who sees so large and so beautiful a corolla escape from so small a dwelling. The petals are frequently white, with a delicate edging of scarlet or rose color, or red petals with white edges, so variously diversified that two plants are seldom alike in their flowers. With what amazement and delight do we frequently regard the ingenuity of the mechanic when he displays the movements of a watch or musical box, encompassed in a case of diminutive size; but the most complete and costly of these baubles are as inferior to the works which Nature has employed on the Poppy, as the clumsiest wheel of a country wheelwright is to the finished mechanism of the most finished watchmaker. The calyx of the Poppy not only shuts in the numerous and large petals of the flower with its innumerable chives, bearing their anthers on points as fine as hairs, each anther containing an innumerable number of fertilizing particles, but it also contains the capsule, which in itself cannot be examined without exciting our utmost admiration of the wisdom with which it has been formed by the Universal Creator. The capsule is covered by a shield-formed stigma, thickly perforated, so as to admit the fecundating particles of the farina, which are so disposed around the eleven chambers of the capsule, that each seed receives its regular portion of this matter by means of an umbilical cord, notwithstanding that there are frequently six thousand of these vegetable eggs contained in one capsule. When we reflect that each of these small seeds is so admirably perfect in its minute dimensions as to contain all the essentials necessary to form a plant on the following year, which is in turn destined to produce at least twenty capsules, we must exclaim with Pope,

How wondrous are Thy ways,
How far above our knowledge and our praise.

The Carnation Poppy will thrive in any soil or situation; but Mr. Pirolle tells us that the seeds should only be gathered from the most double kinds, and that the capsules should be taken from the centre stalk of the plant only; it is a kind well adapted to ornament newly planted shrubberies, or the foreground of

large flowering shrubs, as also to give a gaiety to those parts of the parterre where the early flowers have decayed.

The *PAPAVER ORIENTALE*—EASTERN POPPY, was discovered by Tournefort, in America, from whence he sent the seed to the royal garden of plants at Paris, from whence our seeds are derived. It is a perennial plant, easily propagated by dividing its roots in the autumn; and though a native of the East, will bear the severity of an English winter without injury, especially if planted on a dry soil; rather more care should be taken with it in the United States. The seeds should be sown as soon as ripe in pots filled with a rich and fresh loam. These pots require the protection of a greenhouse or frame for the winter months, and the following spring the young plants may be transplanted into a bed or other pots, and removed again in the autumn. From the magnificence both of its size and color, it belongs rather to the foreground of the shrubbery than to the borders of choice flowers. The petals are generally of a bright red, with black rays at the base, but they sometimes vary to a reddish orange color. It is no small recommendation to this plant that it flowers freely under the shade of trees, as we have but few plants that blossom in the shade with a red flower.

PAPAVER NUDICAULE—NAKED STALKED POPPY. This is one of our own species, found in Labrador; it produces a yellow flower with a fragrance similar to that of the Jonquil, especially in the morning and evening. As its residence implies, it is a hardy perennial plant, generally raised from seed sown either in the autumn or spring. The flowers continue in succession from June to August, sometimes varying to a pure white. There is another species, the English *P. Cambricum*, which is deliciously fragrant. This plant was of course introduced in Thompson's Castle of Indolence.

Hasselquest mentions the case of a Dervise on board the same vessel, who not having proportioned his store of Opium to the length of his voyage, would have committed suicide had they not landed him to obtain a supply. A Persian prince had so habituated himself to take Opium at certain hours, that he found it impossible to forego the accustomed bane, and died one day, on a journey, because his attendants had omitted to carry a supply.

In the time of Gesner, the village Damons and Phillises proved



Vitis Vinifera
Vine and Grapes.

the sincerity of their loves by placing a petal of the Poppy in the hollow of the palm of the left hand, which, on being struck by the other hand, gave a sound that denoted true attachment, or faithlessness when it failed to snap.

By a prophetic Poppy leaf I found
Your changed affection, for it gave no sound,
Though in my hand, struck hollow, as it lay,
But quickly vanished like your love away.

Millions of pounds of Opium are annually consumed for the purpose of degrading man below the brute ; and so profitable is the trade, that the commerce of England, extensive as it is, could not spare the China proceeds, but must unjustly, and foolishly for them in the end, make the Chinese government allow its introduction whether they would or not. Since the temperance reformation in America, ardent spirits have, in numberless instances, been supplanted by this pernicious drug ; an artifice, however, that will never succeed in sufficiently disguising its effects, for bad as rum is, the use of this deadening soporific is infinitely worse ; and the bloated countenance and shallow brain will always mark the Opium Eater.

The Vine.

“ The drink that’s in the drunkard’s bowl,
Is not the drink for me,
It kills his body and his soul,
How sad a sight is he.”

THE generic name is derived from *Vieo*, to fasten, from the care necessary in tying up its branches. Its characters are : petals cohering at the tops, shrivelling ; berry two or five-seeded, superior.

Pliny tells us, that the god of wine, Bacchus, was crowned with Vine leaves, which thus composed the first crown that was ever made or worn ; this was done because he first taught its use. It sprang from the blood of the giants, who, having made war on the gods, perished in the battle ; on this account the Egyptians, who, whatever was their ignorance in other respects, seemed to be aware of such matters, held it odious, neither

drinking it themselves, nor offering it in libations to the gods. Ovid says :—

Nor were the gods themselves more safe above,
Against beleaguered heavens the giants move.
Hills piled on hills, on mountains, mountains lie,
To make their mad approaches to the sky,
Till Jove, no longer patient, took his time
T' avenge with thunder their audacious crime,
Red lightning played along the firmament,
And their demolished works to pieces went,
Singed with the flames, and with the bolts transfixed,
With native earth their blood the monsters mixed.

How strangely distorted, and reversed in the order of time, is this vision of the drunkenness of Noah, and building of the tower of Babel ; and it shows also, in the refusal of the Egyptians to drink wine, how faithfully they remembered and repudiated the un-filial act of Noah's son. Would that their modern descendants were as conscientious as the sons of Jonadab, the Rechabites, who, even at the present day, in the East, "drink no wine," and maintain the worship of the true God.

The Vine is a native of the countries between Persia and India : it was introduced into Greece by the Phœnicians, who brought it there at the instance of some of the great men who were anxious to raise their own wine, and who succeeded well in the attempt ; from thence we hear of its introduction into Europe, some say into Marseilles at first, and afterwards into England ; in which last place it has always been carefully cultivated. It is at present found in every temperate climate on the earth wherever there is any civilisation ; of which it might rank as a characteristic.

The **VITUS VINIFERA**—**GRAPE VINE**, is a hardy, deciduous climber, bearing queen flowers in June and July. It is characterized by its very deeply cut and lobed leaves, sometimes naked, and at others downy, the first prevailing the most. The fine seeds contained in the germen of each of the flowers often lose two or three of their number in ripening ; the great number borne by the Vines often exhausting the strength, not only of the soil, but of the Vine itself. To give it at this time as much aid as possible, the weeds are carefully rooted up, the superabundant branches pruned, and the grass thinned. It is, of course, the emblem of INTOXICATION.

Arrangement of Flower Gardens.

BY HENRY PHILIPS, F.R.S.

WHEN we are too much confined for want of land to delight by the appearance of extent, we should endeavor to please by beauty; and, where the bounds are too limited to display taste on a large scale, elegance should be associated with neatness. Addison says that there are as many kinds of gardening as of poetry; the makers of parterre and flower gardens he styles the epigrammatists and sonneteers in the art; contrivers of bowers and grottoes, treillages and cascades, he compares to romance writers; whilst those who lay out extensive grounds he honors by the title of heroic poets. Thus, to imitate the serpentine windings of large plantations in small gardens, is scarcely less ridiculous than to write heroic strains in an epitaph on a cock-robin; and it discovers an equal want of taste and good judgment, when we see large grounds frittered into the trifling minutiae of a parterre displaying hearts and diamonds, where nature ought to appear as if at liberty to sport in all her gay luxuriant frolics. Even in the choice of our plants, we should take into consideration the extent of our grounds, for large plants in small gardens are like the use of high flown language when improperly selected for familiar subjects. The all-wise Creator, who raised the cedar, formed also the smallest moss; but the former he planted on the mountains of Lebanon, whilst the latter was placed on a pebble. From this wise ordinance of nature we should learn to select Flora's miniature beauties for the small parterre, leaving the towering and wide spreading plants to ornament extensive grounds.

Flowers never appear to so great advantage as when forming a foreground in the shrubbery, or to the borders of woods. In such situations they seem to have planted themselves, as if for the sake of shelter; whilst the boldness of the trees and shrubs add as much to the delicacy of their blossoms, as the mass of

foliage contributes to the brilliancy of their colors. The bolder flowers should be half obscured by shrubs, for, by being but partially seen, their effect is materially heightened. The smaller flowers must occupy the sloping sides of banks, because they are then brought near to the eye, and they will generally be found growing naturally in such situations. A greater part of the earlier flowering plants may be set under the branches of shrubs and trees, as they thus fill up spaces that would otherwise appear naked in the spring, and their decaying state is veiled over in the later season by the foliage of the boughs. The same arrangement should be made in small gardens, by covering the ground under rose bushes and other shrubs, which blossom in the summer, with the earlier flowers of the year, such as snowdrops, crocuses, &c., which are rather benefited than injured by the partial shelter; and the space of ground they would otherwise require in the parterre may be allotted to those plants that will not flourish in such situations.

The error most frequently committed in planting the parterre, is the inattention shown to the succession of the flowering of plants; but without a perfect knowledge and due regard to this material part of the art of gardening, the parterre will frequently become destitute of flowers at different seasons of the year; whereas, the desirable object of continuing an uninterrupted succession of gaiety in the flower garden, may be attained by attention in the selection and planting of flower roots. Our first step in this case should be to collect a sufficient quantity of those that blossom earliest in the spring, as, at this time, the number of species is not large, and each sort should therefore be planted in greater abundance, so as to give effect by a mass of color. A want of attention to render the parterre gay, at this period, is the great defect of most gardeners. No flowers are more delicately beautiful than those which blossom at this season of the year, when they are received with a double welcome, because their appearance seems, in some degree, to banish the dreary months, and thus to prolong the duration of Flora's cheerful reign.

A very essential part to be attended to is, to observe that the plants of the spring, such as the hardy and early kinds of narcissus, anemones, snowdrops, crocuses, double daisies, &c., should be planted in considerable quantities in one spot; for, when they are divided into little clumps, they make no striking

appearance, as we have noticed in many instances. At this season, also, the ground, under such as are not evergreen, should be completely covered with primroses, harebells, and such other flowers as will flourish in these situations, observing to contrast the colors as much as possible, but not to mix them indiscriminately.

When this is accomplished, we may justly exclaim in the words of Cowley :

But with no sense the garden does comply,
None courts or flatters—as it does—the eye.
Who would not choose to be awake,
While he's encompassed round with such delight
To ears, the nose, the touch, the taste, the sight?
Who that hath reason and his smell,
Would not among roses and jasmines dwell,
Rather than all his spirits choke
With exhalations of dirt and smoke?

We shall not be very minute in giving directions for the summer arrangement, that season being generally well and amply provided for by Flora herself; but we have to speak of a very material part of the duties of those who, at a later period, undertake to furnish the parterre with its beauties. Formerly, Flora took her departure as soon as Ceres and Pomona made their appearance, as if the country was not sufficiently spacious to contain the three goddesses at one time; but since we have naturalized the plants of the tropics to our climate, we have the delight of seeing these three deities in perfect reconciliation, walking hand in hand, and continuing their embraces until driven by Boreas into temporary shelter. The vine is now seen suspending its purple clusters over the blushing petals of the China rose; the barberry bush hangs its crimson fruit over the variously colored asters of China; the mountain ash droops its clusters of coral berries over richly painted dahlias; the juniper mixes its blue powdered berries as a contrast to the golden marigolds of Africa; the purple and the sweet-scented white clematis entwine their branches with the native bramble, interweaving the happy gifts of Flora and Pomona on the same festoon; the Indian chrysanthemum waits to decorate its branches in all the hues of Iris, so as to rival and succeed the mellow fruits of the orchard. Thus we now see the well dressed parterre clothed in the various robes

of distant climes, cheering the month of November, and daring the rigors of December, until its beauties are overtaken and hidden by the falling snow.

The flowers of the autumn are generally of a larger size and richer color than those of the spring and summer, consequently, they are less delicate and more showy in their appearance; and as many of them, such as the hollyhock, the sunflower, and dahlia, grow to a considerable height and size, their proper place is among the shrubs; for, since there are but few trees or large shrubs that make a show at that time of the year, the plantation will be greatly enlivened by this arrangement. The chrysanthemums are also better adapted to beautify the foreground of the shrubbery than to ornament the parterre; and in planting them in such situations, it should be observed to place them so that the shrubs may form a screen from the north, which will add considerably to their time of duration. It is also desirable to give as good a contrast as possible to the color of the blossoms, by the shade of the foliage before which they are planted, observing to place purple flowers before shrubs whose foliage is of a yellowish cast, as the common laurel; and those with white petals in front of the darkest foliage, giving the yellow or copper-colored blossoms to the blue-greens. Again, in planting the china-asters, where the colors are not ascertained, they should not be planted too near the chrysanthemums, excepting in front of the white variety, as the general colors of these two kinds of flowers are too similar to harmonize agreeably; but where the purple aster can be planted near the yellow chrysanthemum, and vice versa, the effect of the colors is heightened. In planting flowers, an indiscriminate mixture is generally bad, although it may be admitted in some instances. Nature seldom confuses her colors, and we should, in arranging them, endeavor to imitate her operations, and let the dyes

In bright suffusion glow,
That now with gold empyreal seem to glow,
Now in pellucid sapphires meet the view,
And emulate the soft celestial hue.
Now beam a flaming crimson to the eye,
And now assume the purple's deeper dye;
But here description clouds each shining ray,
What terms of art can Nature's power display?

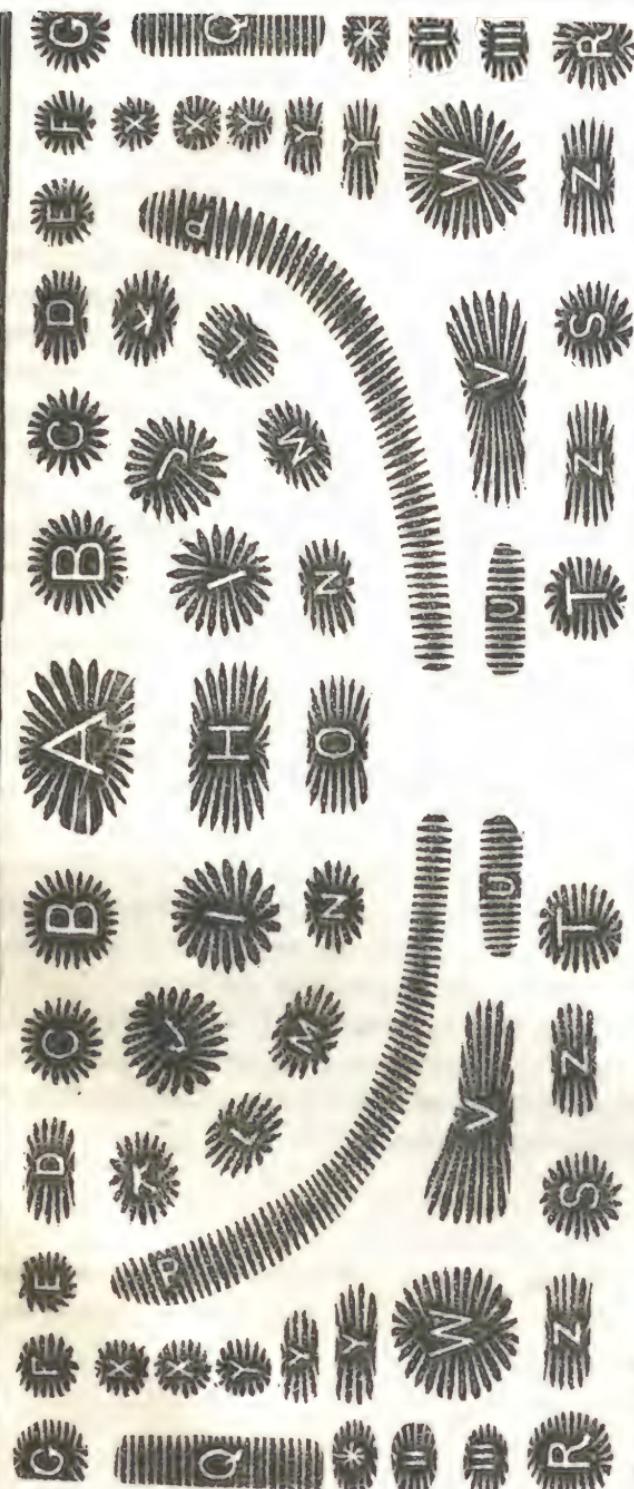
FALCONER.

FLORAL ARCHITECTURE.

THE decorative parts of architecture were originally derived from flowers and plants. The lotos flower presents us with a model of the principal embellishments of Indian buildings, and the palm-tree seems to have given the first idea of columns to the ancients. Hiram ornamented the capitals of the celebrated pillars he wrought for Solomon with lilies and pomegranates; and the Corinthian capital is stated to have been first invented by Callimachus, a famous architect, who, being engaged to make some pillars at Corinth, took the form of his enrichment from the following accidental circumstance:—Passing a basket, covered with a large tile, that had been placed on the ground over a root of acanthus, the stalks and leaves of which had burst forth, and spreading themselves on the outside of the basket, were bent back again at the top by the corners of the tile, the beautiful appearance of this combination so delighted Callimachus by its elegance and novelty, that he immediately adopted the form of the basket surrounded with the acanthus as a capital for his pillars.

Repton remarks, that the general forms of enrichment may be thus classed:—"The Gothic may be derived from the bud or germ, the Grecian from the leaf, and the Indian from the flower; a singular coincidence," says this British architect, "which seems to mark that these three styles are and ought to be kept perfectly distinct." The pagodas of the Chinese seem to us to have been modelled after the form of some species of pine trees [Phillips]. It is a remarkable fact that the candlestick of the Tabernacle, Exodus xxv. 31, was, with regard to its ornamental work, fashioned exactly, in all its parts, after the almond blossom, flower-cup, bud, fruit, and even the stem.

We are indebted to the courtesy of RUFUS PORTER, Esq., Editor of the *Scientific American*, for the following plate, which so aptly answers our purpose.



EXPLANATION.—In this cut is shown a beautifully arranged plan for a small flower-garden, of the dimensions of about 24 by 10 feet.

A. Dwarf Sun-flower : yellow.
B. Purple Flocks : reddish purple.
C. London Pride : scarlet.
D. Bachelor's Buttons : blue.

N. Double Marygold : orange.	E. Double Marygold : orange.
F. White Chrysanthemum.	F. White Chrysanthemum.
G. Morning Glory : various.	G. Morning Glory : various.
H. Zinia, Splendid : do.	H. Zinia, Splendid : do.
I. African Hibiscus : variegated.	I. African Hibiscus : variegated.
J. Red and White Malope.	J. Red and White Malope.
K. Crimson Coreopsis : variegated.	K. Crimson Coreopsis : variegated.
L. Mourning Bride : dark purple.	L. Mourning Bride : dark purple.
M. Sweet William : diversified.	M. Sweet William : diversified.

W. Red and White Petunia and Convolvulus.	W. Red and White Petunia and Convolvulus.
X. China Aster : various.	X. China Aster : various.
Y. Dwarf Poppies : variegated.	Y. Dwarf Poppies : variegated.
Z. Larkspur : brilliant blue ; and Ladies' Delight : variegated.	Z. Larkspur : brilliant blue ; and Ladies' Delight : variegated.
* Perennial Flax : blue.	* Perennial Flax : blue.
French Marigold : orange.	French Marigold : orange.

V. Escholtzia : bright yellow.



Presented to J. R. Newman.

John R. Newman M.D.

Leaves.

THESE epitomes of vegetable nature, containing within themselves the germs of independent existence, are indispensable to the growth of the plant. They are its lungs; by their means the ascending sap is separated from its superfluous oxygen, and a supply of carbonic acid taken in, and combined with it to fit it for its offices of nourishing the various parts. The quantity of water they perspire is almost incredible. Hales placed a sunflower, $3\frac{1}{2}$ feet high, presenting a surface of 5,616 square inches, in the air in favorable circumstances, and found that it perspired from twenty to thirty ounces avoirdupois every twelve hours, or seventeen times more than a man. Many experiments have been tried since on the same subject. It is found that some will perspire even more in the same ratio than the sunflower; the amount varying of course with the warmth and dryness of the air and exposure to light; in damp evenings it is not at all perceptible. This can only be understood by explaining the peculiar structure of the leaf, which consists of a series of cells, mostly six-sided, covered with two membranes. Looking at these through a compound microscope, we discover an immense number of pores communicating with each other by open lines like network; these are called *stomata*; they vary in shape in different plants, but most commonly incline, like the cells, to a six-sided form. They are always most numerous on the lower surface of the leaf, only enough being on the upper, as a general rule, to act as safety valves, and prevent the accumulation of too much watery matter; they are also so arranged as to close when there should be a limit to the perspiration. Leaves, which exist entirely under water, have none whatever. They vary in number. The *Rheum Palmatum*—Rhubarb, has 1,000 on the upper surface, and 40,000 on the under; the *Dianthus Caryophyllus*—Carnation, has 38,500 on both surfaces; and lastly, the *Hydrangea Quercifolia*—Oak-leaved Hydrangea, has none on the upper, and 100,000 on the lower. This common hot-house plant requires a constant supply of water, and if not assiduously supplied, the leaves soon wither and become crisp. The whole apparatus of the leaf is nothing more than a contrivance to ex-

pose as much green surface as possible ; this green matter, or CHLOROPHYLLE, as it is called, consists of minute grains lying loose in the cell of the framework of the leaf, and is only formed when exposed to light ; by it alone the sap is purified. Yet in some cases the stem performs the office described. The dodder has no leaves ; many of the cactuses are perpetually destitute of foliage, as well as some euphorbias ; yet in all these cases, the true leaf is still present but unexpanded, the green color of the stem betraying its active agent. Nuttall says, "in the *Xylophyllum* and *Ruscus* (the butchers-broom), the ambiguity of the stem and leaf attains its utmost ; for the apparent green leaves perform at once the functions both of branches and foliage, the extreme branchlets appearing perfect leaves, but possessing the singular faculty of producing flowers, either on their surface, as in *Ruscus*, or in the depressions of their margin, a circumstance exhibited in the curious *Xylophyllum*. In *Cypressus Disticha*, the smallest branchlets possess a common function with the leaves, being equally green when growing, and both alike deciduous together. In all these examples it is clear, that the foliage is only dispensed with, when the succulent or herbaceous stem becomes capable of performing the foliar functions ; because the aerating of the sap, and the elaborating it for the maintenance of the other parts of the plant, are the indispensable foliar functions.

A leaf, then, as will be seen from what we have observed, is nothing more than an expansion of the stem, made up like it of two parts, cellular and woody ; the first, of course, consisting of the green pulp, the second, the framework in which it is laid. The woody matter in the leaf serves the same purpose it did in the stem, giving support and affording tubes for the conveyance and distribution of the sap. When the leaf is expanded horizontally, its most general position, it presents two different kinds of surfaces, the one to the sky and the other to the earth. This difference is owing merely to an arrangement of structure for the regulation of its perspiration, for the leaves of aquatic plants undergo changes to meet their situation ; and in the acacias that have true vertical leaves, both sides are precisely alike. These last constitute more than half of the forests of New Holland, and are the cause of that peculiar distribution of light and shade for which they are noted, and which was undiscovered till the time of Robert Brown.

A leaf is said to be *sessile* when it expands immediately from the stem ; the portion next the stem is called its base, the termination or farthest portion, the apex. When there is but one piece, no matter of what shape, the leaf is simple ; when more, it is compound ; a distinction, however, in some cases impossible to determine. In the latter case they are generally jointed, and in the usual season fall off separately ; and this should be remembered the more as the *simple* or *compound* leaf, whichever the case may be, runs through the genus, and in almost all cases in the natural group. Goethe, the great German poet, wrote a book, the Metamorphoses of Plants, to prove, among other things, that the almost infinite forms of leaves with regard to outline, &c., owe their origin to the various modes in which the woody skeleton is ramified in the parenchyma. This distribution is termed *venation* ; his theory is the one adopted by our most learned botanists of the present day. The veins or bones of the skeleton-frame either divide at the base, and run parallel to each other their whole length, forming the *parallel-veined* leaves, which are peculiar to endogenous plants ; or else there is a back-bone which sends off others from it, which, in turn, meet in all directions, called, from the resemblance to the meshes of a net, *netted-veined* leaves, belonging almost entirely to the exogenous plants. All that now remains to a perfect understanding of the varieties of these two grand divisions, will be discovered at a glance by reference to the plate, where numerous specimens are presented for illustration. The leaf-stalk is called the Petiole ; its expanded portion the Lamina or Blade ; the stalk generally runs through to the end, forming the midrib. The terms to express the names of the leaf are borrowed from the names of different objects, which we will now proceed to explain.

SIMPLE LEAVES.

- FIG. 1. Orbiculate—*Round*, both diameters equal, circumference circular
2. Reniform—*Kidney-shaped*, roundish and hollowed at the base, without angles.
3. Cordate—*Heart-shaped*, ovate and hollowed at the base, hinder part no angles.
4. Lunulate—*Moon-shaped*, round and hollowed at the base, hinder part no angles.
5. Triangular—*Three-cornered*, disk surrounded by three prominent angles.

- FIG. 6.** **I** hastate—*Javelin-shaped*, triangular, base and sides hollowed, angles spreading.
7. **L**aciniate—*Jagged*, variously divided into parts, indeterminately subdivided.
8. **C**artilaginous—*Bristly*, edge strengthened by a tough border, differing from the leaf.
9. **C**risp—*Curled*, circumference larger than the disk—all such, monsters.
10. **H**ispid—*Rough*, disk covered with a stiffish sort of frangible bristles.

COMPOUND LEAVES.

- 11.** **B**iternate—*Three leaves on a stalk*, each leaf ternate.
12. **B**ipinnate—*Double-winged*, when the leaves of a pinnate leaf are pinnate.
13. **T**riterinate—*Three leaves borne on each petiole*, each leaf composed of three in itself.

DETERMINATE LEAVES.

- 14.** **I**nflex—*Bending inwards*, leaf is bowed upwards towards the stem.
15. **S**eminal—once cotyledons, and are the first to appear—*seed-leaves*.
16. **F**loral—*Flower-leaves*, placed at the coming out of the flower.
17. **P**erfoliate—*Base of the leaf continued across the stem*, till it *grows together around it*.
18. **F**asciculate—*Bundled*, coming out from the same point.
19. **I**mbricate—*Corded and erect*, so as to lie one over another.

Leaves present different forms according to their habits, but as a general rule, the cause of all alterations may be discovered by a comparison with the true type. Sometimes they become succulent, as in the ice plant, where the skeleton is entirely concealed; at other times the parenchyma seems wanting, and they are scale-like, or present a spinous appearance. In many instances the *petiole* undergoes peculiar transformations, by which pitchers, saddles, and many other curious objects are produced. These are obviously for useful purposes, and to supply water when it cannot otherwise be produced, and thus sustain men or animals. The Ceylon monkey-cup, or Chinese pitcher-plant, is one of them. The leaves are sent out at once from the stem; the central woody portion becomes a tendril sometimes nearly a foot long, swelling out at its extremity into a handsome cylindrical pitcher, always holding, unless recently emptied, about seven ounces of perfectly pure water, secreted by the plant itself, and furnished with a tightly fitting lid, to prevent evaporation. Travellers tell us that not only do *they* take advantage of this contrivance of nature for their benefit, but that the *monkeys* have also discovered the secret, and will coolly lift up the lid and drain the

cup when no stream is at hand to satisfy their thirst. The bladder tillandsia will hold nearly a quart of rain water. The traveller, Dampier, speaking of this plant, says, "We stuck our knives into the leaves, just above the root, and that lets out the water which we catch in our hats, as I have done many times to my great relief." The side-saddle plant will scarcely hold above a gill, and unless when pierced by some insect, is generally full. The two latter species we have mentioned, collect the water and do not secrete it themselves.

In our estimation, the most wonderful change the petiole or leaf itself undergoes is that of the fly-trap. Nuttall says that it has hitherto been solely found in the immediate vicinity of Wilmington, in North Carolina, where it occurs in abundance in mossy bogs. The leaf is thick, opaque, and wedge-shaped, and jointed to its extremity is the curious and celebrated trap. This is of a circular form, and completely edged with peculiar bristles which fit into each other perfectly when the leaf is closed. The irritability resides chiefly in certain glandular or secreting hairs, which are disposed on either side the trap lobes. Should a fly or any other insect alight on the trap, it instantaneously folds up and causes a sure and speedy death. Some have supposed that they did this to provide themselves with nutriment, by feeding on the elements which putrefaction set free. It may be so; but from their situation we would conjecture they were already plentifully supplied with such aliment. The sensitive plant will fold itself up to escape the touch, but there are some that, to show signs of sensibility, need neither sun-light nor touch. The moving plant is, as Linnaeus observes, wonderful on account of its voluntary motion. No sooner, continues he, had the plants raised from the seed acquired their ternate leaves, than they began to be in motion this way and that. This movement did not cease during the whole course of their vegetation, nor were they observant of any time, order or direction; one leaflet frequently revolved, whilst the other on the same petiole was quiescent; the *whole* plant was very seldom agitated, and that only during the first year; but sometimes most of the leaves would be in motion at the same time. This motion does not depend on any accidental or external cause, such as touching, heat, cold, light or darkness, for they will neither excite it nor prevent its continuance. Bractea or floral leaves are peculiar to some plants; they

grow very near the blossom, and are often mistaken for the flower; they are frequently painted as in the hydrangea, whose pink and lilac bractea are often taken for real flowers, a mistake which is, in our opinion, of very little importance, as the only mode of telling the difference, when it can be told, is that they possess few of the regular organs of the flower, and produce neither fruit nor seed. In the lime tree, painted cup, sage, &c., they can be easily examined.

Leaves vary exceedingly in point of size; from the extreme minuteness of those of the moss, which sometimes require a microscope to obtain a fair view, to the talipot of Ceylon, which are fifteen feet broad and twenty long, a single one being sufficient to shelter twenty men. The natives, when travelling, make huts of them, use them as paper, and finally adore them.

Climate seems to have a great deal of influence in regard to the fall of leaves. Under the equator the trees are perpetually verdant, and the leaves rarely fade till they are six years old; yet moved to a colder latitude they will be annually naked. The opposite holds true with Northern plants transported to Southern regions. The currant, originally a native of the colder parts of Europe, became perennial when taken to St. Helena; and reversing the example, the evergreen quince of the South parts every year with its leaves in our latitude. If the kidney bean is protected from the frost it will continue green all the year round. We would not be understood to say that an evergreen leaf lasts as long as the plant. All such, on the contrary, as well as the annual and perennial, throw them off; the only difference being, that we do not notice their loss, if others come out in their stead, and the same appearance is still presented to us. All kinds of plants are short-lived, no separate part lives a great while; new leaves, new bark, new wood must be continually formed, or the whole will decay. We will speak of this hereafter, but will merely state at present that when the vital principle of the leaf has done its work, when the main-spring is unwound as it were, the separate part, like a crushed finger, dies, and the living part casts it off.

One would naturally expect that large trees would put forth large leaves, as they are well able to endure the burden; but it is found that no such proportion exists, except perhaps in the case of the talipot, which exceeds in size and dimensions a ship's mast. The leaves of the oak will not compare with those of the burdock,

nor the pine with the skunk cabbage. The difference, however, is probably made up in the immense number; for the exceptions to the general rule, the large leaved trees, bear but very few in comparison with others.

VERNATION or PREFOLIATION is the name given to the manner in which the future leaves are folded in the bud; the study of this will richly repay all the trouble bestowed on it, even if nothing more was gained from it than the opportunity of observing how very closely nature regulates even the minutest operation. In respect to the manner of their folding they are either (see plate),

1st. Convolute—*rolled together*: when the margin of one side surrounds the other margin on the same leaf in the manner of a cowl or hood, as in the pepper, lettuce, cranberry, goats-beard, &c., and many grasses.

2d. Involute—*rolled in*: when their lateral margins are rolled spirally inwards on both sides, as in the honeysuckle, apple, pear, nettle, elder, buckthorn, water lily, liverwort, buttonwood, &c.

3d. Revolute—*rolled back*: when their lateral margins are rolled spirally backward on both sides, as in rosemary, foxglove, primrose, thistle, water pepper, fire-weed, &c.

4th. Conduplicate—*doubled together*: when the sides of the leaf are parallel and approach each other, as in the oak, hazelnut, trumpet flower, raspberry, &c.

5th. Equitant—*riding*: when the sides of the leaves lie parallel, and approach in such manner as the outer embrace the inner, as in the yellow day lily, iris, calamus, sedge, pasture grass, &c.

6th. Imbricate—when they are *parallel* with a straight surface, and lie one over the other, as in the bell flower, &c.

7th. Convolute. 8th. Involute opposite. 9th. Obvolute—*rolled against each other*: when their respective margins alternately embrace the straight margin of the opposite leaf, as in the pink, &c.

10th. Plicate—*plaited*: when their complication is in plaits lengthwise, as in the passion flower, Guelder rose, hollyhock, &c.

11th. Involute alternate. 12th. Revolute opposite. 13th. Equitant ancipital. 14th. Equitant triquetrous.

When the leaves first shoot they are without any external covering, but the cold of early spring in our climate, chills and hardens them, so that instead of expanding they become chilled

and checked in their growth. They harden into scales, which serve as a protection for the internal ones, which being thus protected, do not fully come out until the atmosphere has been warmed sufficiently to enable them to become fully developed. This is beautifully shown in the bud of the maple; the outer scales are short, hard, reddish, and rather hairy; as you examine inwards, they are longer and softer until you find the true leaves. So different is the weather-case from the leaf, that examples of the same species under different circumstances have to be shown to prove that this is the real mode of their formation, and that scales and hairs are in reality nothing but modified leaflets. The best instance, and the one commonly shown, is that of the horse-chestnut, which, in its native clime of India, unfolds its leaves to the mild and genial atmosphere without any risk of such degeneration being required, and is totally free from scales and hair.

There are some curious leaves at the lower part of the plate, which being of no particular benefit, do not need description. The green color of leaves, which is best adapted to our organs of vision, is manifestly a providential arrangement, for upon no other color could we constantly rest our eyes without eventually causing disease. Captain Parry tells us that his men were so dazzled by the continual glare of the snows of the polar regions, as to become for the most part blind; and fatal results would inevitably have followed had he not by means of *green* spectacles or crape of that color worn over the eye, obviated in some measure the pernicious effects. The pleasant impressions produced by the innumerable hues of this color have been well described by Cowper:

No tree in all the grove but has its charms,
Though each its hue peculiar; *paler* some,
And of a *wannish grey*; the willow such;
And poplar that with silver lines his leaf;
And ash far stretching his umbrageous arm;
Of *deeper green* the elm; and deeper still,
Lord of the woods, the long surviving oak.



Trumpet-flower
Forget-me-not
Bramble

Green River, N.Y., U.S.A.

The Trumpet Flower.

THIS beautiful flower is the type of a natural order of the same name, of little known importance except as ornaments; they are mostly trees or twining shrubby plants, sending out a great number of large and extremely showy flowers, celebrated for their splendor and beauty. The *BIGNONIA RADICANS*—*TRUMPET FLOWER*, belongs to the class Didynamia, order An-giospermia. The generic name was given to it in honor of that polite scholar, the Abbé Bignon, who was Librarian to Louis the Fourteenth, of France. Its characters are—calyx cup-shaped, and of a leathery consistence, with a marked five-toothed border; the corolla bell-formed, five-lobed, and swelled out on the under side; the capsule a kind of two-celled pod, which is long, and has the seeds alternately attached; the seeds very thinly and delicately winged. Some of these are deciduous, with the leaves falling off in the usual season; others are evergreens. They are mostly tropical flowers. Our species, the *B. Radicans*, is occasionally found by the banks of rivers, among the bushes, but more commonly cultivated; in the southern states, of which it is a native, it is very common. It has a creeping, long branched stem, which occasioned the specific name, which often ascends upwards of forty feet, adhering with great tenacity wherever it attaches itself, doing this in a manner similar to the Ivy by sending out fibres from the branches, at short intervals. The leaves, which are ovate and toothed, are arranged in two rows on the sides of a common stalk. The flowers, which are produced in terminal clusters from branches of the same year, are of a yellowish scarlet. The corolla is trumpet-shaped, and three times the length of the cup in which it is set. The flowers are noted for generally containing the rudiments of a fifth stamen, which is nearly developed. Another variety of this species has bright scarlet flowers. It continues in flower during July and some part of August.

This is known in France as the *Jasmin de Virginie*, and in England as the *American Jasmine*, though why such names should be given to it I am at a loss to determine. In the latter

country it is the only one of the species that will live in the open air; when there, it bears an orange-colored flower from July to August. It is the emblem of Separation, about which Robert Tyas says—How many ravishing harmonies spring up on every side from the association of plants with the animal creation! The butterfly embellishes the rose; the nightingale sings in our groves; and the industrious bee enlivens the flower which yields its sweet treasures. Throughout nature the insect is associated with the flower; the bird with the tree; and the quadruped with the plants. Man alone is able to enjoy all these things; and he alone can break the chain of concord and of love, by which the whole universe is bound together. His greedy hand bears off an animal from its native clime, without thinking of its habits and its wants; and yet more frequently neglects the plant, which is made to forget, in its new slavery, the attractions of its own country. Does he import a plant? He neglects the insect which animates it, the bird which adorns it, and the quadruped which is nourished by its leaves and reposes under its shade. Behold the Virginian Jasmine, with its beautiful verdure and flowers; it always remains a stranger amongst us (English). We always prefer our lovely honeysuckle before it. From the woodbine the bee gathers honey, the goat browses its verdure, and its fruit is the food of legions of the feathered tribe. Could we see the humming bird of Florida hopping about its slender branches, for in the vast forests of the new world it prefers its beautiful foliage to that of any other shrub, we should doubtless regard with greater admiration and pleasure, the rich Virginian jessamine. The humming bird makes its nest in one of the leaves, which it rolls into the shape of a horn; it finds sustenance in the nectareous vessels of its red flowers, which are similar to those of the foxglove; and its little body, when resting on the Trumpet flower, appears like an emerald set in coral. It is sometimes so tame and fearless that it may be taken with the hand. This little being is the soul and life of the plant that cherishes it. Separated from its aerial guest, this beautiful twining plant becomes as a desolate widow who has lost all her charms.

Piety has made this flower emblemise the Christian whom his Master has left; though outward show remains the same, a name-

less charm is wanting which nothing but the absent Dove can impart.

My Saviour, can it ever be
That I should gain by losing thee ?
The watchful mother tarries nigh,
Though sleep has closed her infant's eye,
For should he wake and find her gone,
She knows she could not bear his moan.

But I am weaker than a child,
And Thou art more than mother dear ;
Without Thee, Heaven were but a wild,
How can I live without Thee here !

The days of hope and prayer are past,
The day of comfort dawns at last,
The everlasting gates again
Roll back, and lo ! a royal train
From the far depths of light once more
The floods of glory outward pour ;
They part like shower drops in mid air,
But ne'er so soft fell noon tide shower,
Nor evening rainbow gleamed so fair
To weary swains in parched bower.

KEBLE.

The Forget-Me-Not.

WE have given this flower again for the sake of showing its beautiful appearance when grouped with others, and in conformity with the general request to give some directions for its cultivation. We extract what follows from the *Flora Historica* of Henry Phillips. It has become a favorite flower with the German people, as Goethe's "Lay of the Imprisoned Knight" will evince.

Ah ! well I know the loveliest flower,
The fairest of the fair,
Of all that deck my lady's bower,
Or bind her floating hair.

Not on the mountain's shelving side,
Nor in the cultivated ground,
Nor in the garden's painted pride,
The flower I seek is found.

Where time on sorrow's page of gloom
 Has fixed its envious lot,
 Or swept the record from the tomb,
 It says Forget-me-not.

And this is still the loveliest flower,
 The fairest of the fair,
 Of all that deck my lady's bower,
 Or bind her floating hair.

This flower has been figured as a device on the seals of lovers, and had its praises sung in their verses :

To flourish in my favorite bower,
 To blossom round my cot,
 I cultivate the little flower
 They call Forget-me-not.

It springs where Avon gently flows,
 In wild simplicity,
 And 'neath my cottage window grows,
 Sacred to love and thee.

This pretty little flow'ret's dye,
 Of soft cerulean blue,
 Appears as if from Ellen's eye
 It had received its hue.

Though oceans now betwixt us roar,
 Though distant be our lot,
 Ellen ! though we should meet no more,
 Sweet maid, Forget-me-not !

It frequently flowers in May, and continues to give out a succession of flowers until the end of August. It is increased by separating the roots, and planting them in a moist but free earth ; and when planted thickly on banks or borders of streams, or ornamental lakes, it is seen to peculiar advantage. When cultivated in pots, it ought to be shaded until the slips have taken fresh root ; after which the pots should be placed in an open and free air, giving them water when the weather is dry. When in blossom, they may be taken into the house, where these elegant little blue flowers, with their bright yellow eye, cannot fail to attract all the admirers of nature's charms. This plant is sometimes seen growing naturally in dry grounds, but in such situations, both the plant and the flowers are very diminutive in comparison to those growing in or near the water. We earnestly

recommend the cultivation of this rustic little beauty, and particularly so to those cottagers who live near towns, as by transplanting the trailing branches from their borders into small pots, they would find it a profitable employ to send them to market, for few people would withstand the temptation of purchasing these alluring flowers that carry in their eye the tale of Forget-me-not.

We have lately found the *Myosotis Versicolor* growing in considerable quantities on the graves in a church-yard. This beautiful but miniature flower exhibits a rare instance of plants producing flowers on the same stem of such opposite colors as blue and yellow. We observed several plants of this species of myosotis, with some flowers perfectly yellow, some crimson, and others blue, all blossoming at one time on the same stem.

We are informed that the decoction, or the juice of the *Myosotis Palustris*, has the peculiar property of hardening steel, and that if edged tools of that metal be made red hot, and then quenched in the juice or decoction, and this repeated several times, the steel will become so hard as to cut iron, or even stone, without turning the edge.

In the Netherlands it is common to make a syrup of the juice of the *Myosotis*, which is given as a remedy against consumptive coughs.

It belongs to the Natural Order Boraginaceæ, which are herbs or shrubby plants of an innocent mucilaginous nature, with just enough astringency to make the juice (from holding in solution the salts which cause it) of a demulcent and pectoral nature. The germen is deeply divided into four lobes, having the style proceeding from their base, which becomes, when in fruit, little nuts. The seeds, as a general rule, contain little or no albumen.

Where flows the fountain silently
It blooms, a lonely flower,
Blue as the beauty of the sky,
It speaks, like kind fidelity
Through fortune's sun and shower
Forget-me-not.

F. G. HALLECK.

The Bramble.

THERE are not less than twenty native species of this genus in the United States; some valued for scent, some for the elegance of their flowers, and some for the deliciousness of their fruit; while others are viewed by the farmer as troublesome pests. They belong to the Natural Order, Rosaceæ, in which, in point of affinity and close resemblance, they are placed next its type, the rose, differing from it, only in having the whole calyx spread out flat, and the clustered seeds each coated with a pulp. The generic name comes from the Latin, *ruber*, red, so called from the red color of its fruit. Its characters are—calyx five-cleft, inferior; corol five-petalled; pistils numerous; berry composed of many juicy, one-seeded racines on a dry receptacle. It belongs to the class Icosandria, order Polygynia. We will particularise a few of the most useful varieties, and first, the

RUBUS IDEUS—**GARDEN RASPBERRY**, is generally from four to six feet in height, with a prickly stem; the leaf-stalks are hollowed lengthwise, with a rounded groove; the leaflets arranged on them in two rows, in threes or fives, of an oval, tapering shape, and covered beneath with a fine down. It blooms in May; the flowers are white, in irregular bunches. Of the fruit a syrup is used for medicinal purposes, to allay thirst in fevers, and sometimes, though under a mistaken idea, in Calculus.

RUBUS VILLOSUS—**TALL BLACKBERRY**. This well known bramble is found almost everywhere among the brushwood of neglected fields and pastures, borders of woods, along the roads and fences, and wherever it can find access, intruding into the farmer's fields and his wife's garden. Like the preceding species, it grows to the height of from four to six feet, the stem branching, somewhat furrowed and angular, covered with hair, and extremely rough and bristly. The leaves are in threes or fives, on a hairy grooved petiole; the leaflets of an oval taper-form, sharply notched on the margin, covered on both sides with hair, the under side being very soft and downy. Both the leaf and flower-stalks are hairy and prickly, and the expectation which is thus raised from the care shown by nature in guarding the tree, is fully realized afterwards in the abundant and delicious fruit.

The flowers, which are large and white, grow in clusters; the calyx short, with awl-shaped divisions; the fruit, at first green, and then red, is, when ripe, a black color, agreeable both to sight and taste.

Its bark has been considered a valuable and powerful astringent, about which Professors Bigelow and Chapman express decided and very favorable opinions. The former says he has tested its efficacy, both internally and externally, in a sufficient number of cases to become satisfied of its efficacy wherever astringents are required; and the latter remarks—"that of all the vegetable astringents, this, I have reason to believe, is among the most active and decidedly efficacious in certain cases. To the declining stages of dysentery, after the symptoms of active inflammation are removed, it is well suited, though I have given it, I think, with greater advantage under nearly similar circumstances in cholera infantum. To check the inordinate evacuations which commonly attend the protracted cases of this disease, no remedy has ever done so much in my hands. Even two or three doses will so bind the bowels that purgatives become necessary. Being so powerfully astringent, this medicine is useful in all excessive purgings, and especially in the diarrhoea of very old people, as well as when it occurs at the close of diseases. During my attendance at our public institutions I had abundant opportunities of testing its efficacy in those cases." The flowers appear in May, and continue till July; the fruit ripening generally some time in August. The jelly made from the berries is very useful, both as an article of diet and remedy in dysenteric affection. The roots are branching, cylindrical, and of all sizes, from the thickness of the thumb down to that of a straw; they are woody, and except the thin bark, whose properties we have described, are inert; on this account the small roots only should be selected. A pint and a half of water is poured on an ounce of the roots and boiled to a pint, a wine glass of which is given four times during the day. Twenty-five grains of the powdered root is its general dose.

RUBUS TRIVIALIS—DEWBERRY. This is often called low blackberry, to distinguish it from the other. The stem is very slender, and like most of the genus, prickly; it is very pliable, running along the ground, and when accidentally buried, and somewhat bruised, putting forth roots. Both leaf and flower-stalks are

covered with prickly needles, having the points curved backwards. The appendages at the base of the leaves are narrow and sharp pointed; the leaves, in threes or fives on the stalk, oblong-oval, sharp, and unequally cut on the edges, green on both sides, and somewhat hairy. The flowers are separate, large, and white, coming out in May and June, and succeeded by the usual large black fruit, extremely sweet and pleasant to the taste. This flourishes best on barren sandy soil. Its medicinal properties are exactly similar to the foregoing, the principal differences between which appear to be the size and the fruit of the *R. Trivialis* ripening sooner than that of the other.

RUBUS CHAMÆMORUS—CLOUDBERRY—So called from its mountain situation, as it is only found, as a general rule, in elevated places. It is a herbaceous plant, quite small, the stem unarmed, and having a white flower on a long downy stalk, which is erect; the petals are oblong; leaves simple, and heart-shaped at the base. It is common to both continents. It flowers in June; the fruit is a beautiful amber-colored berry, not very pleasant to the taste. Linnaeus directed its berry to be taken as a cure for consumption, spitting of blood, and scurvy. It is, however, little known and less used.

RUBUS FRUCTICOSUS—COMMON BRAMBLE. This is characterized as an ornamental deciduous trailer, common to the hedges of Britain, bearing a pink flower from June to September. The stem is angular and furrowed; leaflets are five, obtuse, shining, and even above, and hoary beneath; clusters, decomound, hoary. Tyas says, that the Bramble is made the emblem of ENVY, because it interferes so much with the growth of other plants. It produces suckers which spread rapidly, ripen, and drop their leaves in one year, and resume their foliage, produce blossom, flower and fruit, and die the next. Thus, also, like Envy, it is short-lived, as the envious are usually disappointed, and see the deserving receive their reward.

The following is from that beautiful work, entitled the Moral of Flowers; whatever we have omitted about the Bramble in the foregoing history, will be supplied below:—Who does not remember the time when on a sunshine holiday, a blackberry gathering was the highest treat, and when its insipid fruit was eaten with a relish far beyond that which the rarest hot-house novelty can afford in riper years? Who does not remem-

ber also, the shrinking awe with which he passed the tempting branch after Michaelmas day; believing with a credulity that would have done honor to the darkest ages, the vulgar superstition that on that day the devil casts his club over the fruit? It is amusing to see how gravely Threlkeld rebuts the tradition: "I look upon this as a vulgar error," says he, "that the devil casts his club over them after Michaelmas; for the earth is the Lord's, and the fulness thereof."

But whilst reviving these youthful recollections, we must not forget to notice the connection this plant has with the popular nursery ballad, "The Babes in the Wood." However successfully the rising emotion had been combated in the preceding stanzas, the following lines, even at the hundredth repetition, were sure to open the flood-gates of childish sorrow:

Their little hands and pretty lips,
With blackberries were dyed,
And when they saw the darksome night,
They sat them down and cried.

Nor must Beattie's allusion to

"This tale of rural life, a tale of woes,
The orphan babes, and guardian uncle fierce,"

be passed over; we even now almost share the varied emotions of the infant minstrel, whilst reading the following stanzas:

———“with berries smeared, with brambles torn,
The babes now famished lay them down to die;
'Midst the wild howl of darksome woods forlorn,
Folded in one another's arms they lie;
Nor friend nor stranger hears their dying cry,
'For from the town the man returns no more,'
But thou who Heaven's just vengeance darest defy,
This deed with fruitless tears shalt soon deplore,
When death lays waste thy house, and flames consume thy store.”

Gilpin, the elegant author of "Remarks on Forest Scenery," seems to have outlived all these early predilections, for he treats this poor plant most unmercifully. After speaking of the various shrubs and flowers which might adorn the foreground of a picture, he says, "Of all this undergrowth, I know but one plant which is disagreeable, and that is the Bramble. It does not hang carelessly twisting round every support, like others of the

creeping tribes, but forms one stiff, unpliant curve, nor has it any foliage to recommend it. In short, it is a plant that should not, I think, presume in landscape farther than has just been allowed. It has little beauty in itself, and harmonizes as little with anything around it, and may be characterized among the most insignificant of vegetable reptiles."

Shakspeare treats its fruit with as little ceremony; for when Thersites, a scurrilous Greeian, would show his contempt for all the leaders in the camp, he says of Ulysses, "he is not proved worth a blackberry." The former writer does allow it may be seen with effect, "scrawling along the fragments of a rock, or running among the rubbish of a ruin."

This reminds us of a passage in Hasselquist's travels, who, on visiting the poor remains of Scanderette, one of Alexander's magnificent cities, observed a species of Bramble before unknown to him, growing among the ruins. His botanical research, unwittingly to himself, found a just comment on that passage in Isaiah: "Thorns shall come up in her palaces, nettles and brambles in the fortresses thereof."

What dost thou here, pale flower ?
Thou that afore wert never seen to shine
In gay parterre, or gentle lady's bower,
In lover's wreath or poet's gifted line.

Why from thy lowly haunts,
Art thou now called to have a place and name
'Mid buds whose beauty fancy's eye enchanteth,
Whose fragrance puts thy scentless leaves to shame ?

'Tis that, though suffering ill,
Yea spurned and trodden by each passer-by,
Blossom and berry dost thou proffer still,
As all unmindful of the injury.

Hardest of lessons this,
To suffer wrong with meekness—few, how few
The hand which smites unjustly, stoop to kiss,
Or blessings on the foeman's pathway strew.

Then welcome, lowly flower !
Welcome amid the fragrant and the gay ;
For which of all the buds in summer bower
Can fitter lesson to proud man convey ?

Blackberries, when moderately eaten, are very wholesome, nu-



Coriandrum sativum.
(Coriander)

Drawn especially for J. R. Hellman.

tritious, as well as slightly aperient; but taken as they often are, in inordinate quantities, they sometimes produce a great deal of mischief. The class of fruits to which it belongs, are apt to disagree, on account of their acidity.

The Coriander.

THE Coriander belongs to the Umbelliferæ, one of the most decided natural orders which every one is familiar with, and which is easily known by the umbrella-like manner in which the flower-stalks are disposed. In this order the calyx is entire or five-toothed; the petals and stamens are five; the pistils two, and the ripe germen or fruit always separable perpendicularly into two seeds, variously shaped, hanging from the top of a central, thread-shaped, often cloven receptacle. The flowers are disposed in umbels, and these again generally subdivided, each either with an involucrum or without, and in most instances regular, though in some anomalous. The stem is herbaceous, rarely shrubby; leaves alternate, for the most part repeatedly compound, rarely simple; footstalks sheathing; the flowers white or purplish, sometimes yellow. These are Dr. Smith's characteristics; who also tells us that botanists in general shrink from the study of this order; nor have these plants much beauty in the eyes of amateurs, but they will repay the trouble of a careful observation. The late M. Cusson, of Montpelier, bestowed more pains on them than any other botanist has ever done, but the world has as yet been favored with only a part of his remarks; his labors having met with a most ungrateful check in the unkindness and mortifying stupidity of his wife, who, in his absence from home, is recorded to have destroyed his whole herbarium, scraping off the dried specimens for the sake of the paper on which they were pasted!

The generic name, *Coriandrum*, is derived either from two words, signifying the pupil of a man's eye, on account of the roundness of the seed, or from another, meaning a bug, because of the nauseating bug-like odor of the fresh plant. Its characteristics are: corolla rayed; petals inflexed, emarginate;

invulneres universal, one-leaved; partial halved; fruit spherical. It is a native of the fields of Europe, but in the opinion of many, merely naturalized there from the extensive cultivation, and that it came originally from Italy. It is an exotic in our country, and not much cultivated, as we import the seeds from Europe. The *CORIANDRUM SATIVUM*—*CORIANDER*, is a yearly plant, about from twenty to twenty-six inches in height, with a smooth round stem, which is generally branching, with leaves somewhat resembling those of the common parsley. The flowers, which appear in June, are of a white or whitish-red color, and disposed in subdivided umbels, like, as we have before mentioned, to a great many of its order. The german ripens in August; the flower-cup remains at the base, and it is sometimes even pointed with the style. This curious plant seems to have a double smell; when first gathered it is exceedingly offensive and disgusting, the peculiar fetid odor keeping every one at a distance, and entirely preventing its use, and acting as a link to bind it to the poisonous plants with which it claims affinity in the same order; and very probably it is for this very purpose the smell is given out, for after some time both smell and taste become gratefully aromatic, and we obtain a useful medicine. The volatile oil, to which both are owing, may be easily obtained by distillation with water, and thus furnish us with all its active properties in an elegant and pleasing form for exhibition. As the oil will dissolve in alcohol, maceration in that article will cause its properties to be equally well procured; but to water used in the same way little or no power is given.

It grows best in a sandy loam; the seeds should be sown as soon as the frost will permit, which will generally be in the mild and dry portion of March. The seed should be buried half an inch. Half an ounce will suffice for a bed six feet long and four wide, if sown in rows, as they ought to be, at distances of nine inches apart.

The unfavorable account given us of this plant by Dioscorides, was probably owing to the fresh state in which it was taken, as similar results to those which he describes are at the present day found to be produced when the recently gathered plant is eaten in Spain and Egypt, where mania, lethargy, and other disorders of the brain, follow its exhibition as a cordial. At the present day the seeds are very extensively used by the



Crataegus.
(Hawthorn.)

confectioners in the manufacture of comfits for children, as well as by the practitioners as an aromatic, and in combination with other medicines. Dr. Cullen says, that infused along with lemon, they more powerfully correct the odor and taste of this than any aromatic we possess, and are, I believe, equally powerful in obviating the griping that senna, taken alone, is very ready to produce. In every package of senna that leaves the apothecary's shop there is a quantity of these or fennel seeds; so long and so well has their worth been appreciated. These seeds are round, almost perfectly globular, about an eighth or tenth of an inch in diameter, and of a light grey or yellowish color. It is the emblem of HIDDEN MERIT.

I seek not the gaze of the haughty and proud,
My coat was not made for display,
I only desire that my seeds be allowed
To lessen some pain every day.

The Hawthorn.

THIS is an English importation, about which Aimé Martin says:—Now all nature is enlivened with hope and with joy; the swallow has returned to us once more, and the nightingale warbles her enchanting songs in the neighboring thickets, announcing the duration of fine weather:

Around the hawthorn flings its rich perfume.

Poor vine-dressers! now be assured that the cold frosts shall not again destroy the tender vine-buds, the hope of your long and careful labors. Happy laborers, the rude north winds shall not blight your verdant plains; but the sun shall gild them with his genial rays, and ripen the fruit ye seek for. The Hawthorn has been made the emblem of HOPE, because the young and beautiful Athenian maids brought its branches, covered with flowers, to decorate their companions on their nuptial day, whilst they bore larger boughs of it to the altar. The altar of Hymen was lighted by torches made from the wood of this tree; and it also formed the flambeaux which illuminated the nuptial chamber. We are

told that the Troglodytes, in the simplicity of their mind, tied Hawthorn branches to the dead bodies of their parents and friends ; and at the interment of the corpse they strewed its branches upon the body, and afterwards covered it with stones during the whole of the ceremony. They considered death as the dawning of a life that should never cease. The boughs were used in England as one of the principal decorations of the May-pole. Shakspeare says :

Gives not the hawthorn bush a sweeter shade
To shepherds looking on their silly sheep,
Than doth a rich embroidered canopy
To kings, that fear their subjects' treachery ?
O yes it doth, a thousand fold it doth.

It is in the class Icosandria, order Digynia. The generic name is derived from a Greek word meaning strength, on account of the hardness of its wood. Its characters are : calyx superior, five-cleft; petals five; berry inferior, two-seeded. The well known *CRATEGUS OXYCANTHA*—HAWTHORN, is naturalized in the United States. It is an ornamental as well as useful tree, deciduous in its habit; the leaves are obtuse, subtrifid, serrated, and quite smooth; the flower-stalk and calyx very nearly smooth; the leaves of the latter lance-shaped and sharp. The flowers appear in May and June, they are generally white, with now and then a rose tinge; these, in the autumn, are succeeded by the berries, which are of a beautiful scarlet, growing in clusters, and could ill be dispensed with, as beautiful as well as rich and lively ornaments to our pleasure grounds and forests when there are but few of the gems of Flora to adorn the landscape. This kind of fruit is called haws, which gives name to the thorn.

The *CRATEGUS CRUS GALLI*—COMMON THORN BUSH, is a thorny branching shrub, with tough leaves, which are smooth, irregularly cut on the margins, and somewhat ovate; the thorns are as long and as strong as large needles; the flowers are of a dead white, and grow generally in flat terminal clusters; like the other, it flowers in May and June.

CRATEGUS COCCINEA—RED THORN, has not so many spines; the flowers are similar to the other, but succeeded by large, red, and not unpleasantly tasted fruit.

They belong to the natural order Rosaceæ, and are included in the sub-order, Pomæ, or Apple-like tribe; the whole order is

known everywhere in temperate climates, and valued for its healthy and important fruits. It is said that in the days of chivalry, if a lady favored the suit of her loved, she wore Hawthorn leaves, tied with carnation riband, which signified "hope in love." To us it promises a beautiful spring; to the Greeks it symbolized auspicious marriages; to the Ethiopian tribe, immortal life. In the *Moral of Flowers*, its authoress says:

How true a type this hawthorn bough,
Of youthful dreams in life's first morn,
So thick the fragrant blossoms grow,
What curious eye detects below
The frequent thorn?

But wait a few brief days, and soon
That bough of all its glory shorn,
Its fragrance spent, its blossom gone,
Will to thine eye show one by one
Each pointed thorn.

Thus crowned with light and linked with flowers
Seems life in youth's enchanting morn,
But soon, how soon the tempest lowers,
And stripping Fancy's fairy bowers
Lays bare the thorn.

The Parasites.

THE great characteristic difference between plants and animals is the fact, that the former live on inorganic and the latter on organic substances. Yet nature does not even allow this to be always true, as there is a curious race of vegetables, the Parasites, that will only exist on the elaborated juices of others; so nice is nature in all her gradations that she will not allow science to form exact boundaries in any instance. A common instance of this is the Dodder of our northern states, a species of which ruins, by its warm and destroying attachment, the flax of Europe, as well as its clover, being sometimes equally destructive in our own fields. The celebrated mistletoe is another, of which, according to Nuttall, there is but one species indigenous in the United States, in which, however, it preserves

its wierd reputation. Its motto, "I surmount all difficulty," gives a good specimen of its character. It grows chiefly, it is said, on the summit of fruit trees, though it makes the proud oak sometimes become its slave, and yield its substance to support it. The Druids had a species of admiration for a weakness so superior to strength; the tyrant subjugator of the oak appeared to them alike formidable to men and the gods. In the same tribe we find the largest, and certainly the strangest flower in the world. It was discovered on the stem of a kind of grape vine, by Dr. Arnold, in the island of Sumatra, in 1818; he called it the *RAFFLESIA ARNOLDI*, from the governor's name and his own. He considered it the Titan of the vegetable kingdom, and says, with much truth, that the human mind never had conceived such a flower. The circumference of the fully expanded flower is rather over nine feet; its nectarium calculated to hold nine pints; the pistils larger than cow's horns, and the entire weight of the blossom, of which alone with its appendages the plant consists, is computed at fifteen pounds. The color is a light orange, approaching to a reddish hue, mottled with a yellowish white. Since Dr. Arnold first discovered it, some other species belonging to the same genus, have been discovered in the East, which last fact forms a material help in judging of the truth of the existence of such a plant. The analogy, in this instance, in the vegetable and animal kingdoms, as we have observed in another work, holds good; the Parasite invariably injures the plant to which it is attached, and repays with the vilest ingratitude the sustenance and support afforded by its friend. We have, in our own history, nourished a viper which fortunately showed the sting before much injury could be effected, and whose memory is always associated with the Mistletoes.

The Dittany.

THE ORIGANUM DICTAMNUS—DITTANY OF CRETE, is in the class Didynamia, order Gymnospermia. Its specific name is derived from the Greek words meaning a mountain and rejoice, because it grows in elevated places. Its characters are: strobile



Oreganum Lidamnus.
Bitter.

Watercolor on paper

four-cornered, spiked, collecting the calyxes. Specific characters: lower leaves tomentose; spikes nodding.

Tyas tells us, that when Juno presided at the birth of children, under the name of Lucina, she wore a wreath of this flower, which was purposely obtained for her on such occasions, from Mount Ida in Crete. Ordinary mortals followed her example in obtaining the flower, and it has since then been so much improved that the Queen of Olympus would herself scarcely recognize it. The agreeable fragrance of this shrub, and its medicinal qualities, which rendered it so celebrated among the ancients, still procure it much esteem. Our specimen is an ornamental evergreen under shrub, an inhabitant of the greenhouse, bearing pink flowers from June to August.

The *ORIGANUM MARJORANA*—*SWEET MARJORAM*, is another species of this genus. It has been long cultivated in the gardens for various purposes, as it excels the wild or common Marjoram in all its good properties. The leaves and tops have a pleasant smell, and a warm, aromatic, bitterish taste. Considerable quantities of an aromatic oil are obtained from them, which is so much used as to be for a long time an article of commerce. It is used considerably in nervous complaints with the same intentions as lavender, to which it is by many preferred. The dried leaves make a well known domestic snuff, useful in many of the minor affections of the mucous membranes of the head. The tops are sometimes used by country people to dye woollen cloth purple, or linen of a reddish brown color. It is the emblem of BIRTH.

The Kitabi Gulistan.

THERE was a celebrated Persian poet who wrote a volume called *Kitabi Gulistan*, or the Book of Flowers. My anecdote merely relates to the way in which he was incited to write it, as he tells his own tale. You will remember that he lived in a climate where it is a great luxury to pass a great part of the night out of doors, wandering about in their gardens full of beautiful trees and flowering shrubs, which give out their

scent to the evening air. The poet was one fine evening walking with a friend in a garden in the neighborhood^{*} of Bagdad; a lovely and refreshing spot, he says, "its heart-gladdening groves intertwining over our heads." He describes the moon shining on the landscape, and making a sort of pattern on the ground like a variegated carpet, from the reflection of the trees and flowers. The walks, he says, looked in the gleaming light as if strewed with spangles of crystal and clusters of fruit hung from the trees, shining like the Pleiades. Such is, you know, the Eastern style of description. He wandered about, conversing with his friend, until the night was far advanced, and they began to think of returning to the city. As they were about to take their departure, he observed his friend gather up the skirt of his robe, and fill it with flowers and sweet-scented herbs; roses, hyacinths, spikenard, and sweet-basil. The poet, turning to his companion, observed that the treasures he had collected were of little value, since they would last so short a time. "The flower of the garden," said he, "has no continuance, nor can we confide in the promise of the rose-bower; and philosophers have told us that whatever is not lasting, merits not our affections." His friend inquired, "What, then, is the alternative?" The poet replied, I can write such a *Kitabi Gulistan*, or book of a flower garden, that neither the rude storm of autumn shall be able to lay the hand of usurpation on its leaves, nor the revolutions of the seasons convert the serenity of summer into the gloom of winter. "What," he exclaimed, "could a basket of such fleeting flowers avail his friend! Rather let him pluck a single leaf from the flower garden of the poet. A rose gathered from bowers that surrounded them, could only live a few days at the utmost; but the rose-bower he would himself raise in the book he proposed to write, should bloom on for ever." His friend dropped the flowers he had gathered, and seizing the robe of the poet, said, in the words of an Arabian proverb, "As the generous man promised, so he performed." Saadi willingly pledged himself to perform his promise. The next day he wrote two chapters, and he adds, "the rose still continued to flourish in the garden when the book of the *Gulistan* was finished."

Flowering and its Results.

LINNEUS supposed that buds sprang from the pith, this being found necessary to their development: We have before considered the plant as full of germs, which merely required a little irritation and favorable circumstances for their active development. When these concur, the germ swells, forming a protuberance we call the bud. These different periods are considered, by botanists, as follows: the *eye*, or point which first gives rise to the bud; when it swells it is termed the *button*, and when it begins to unfold, the *bud*. There are three kinds of buds; the first producing flowers alone; the second, leaves (these we have considered); and lastly, those from which both flowers and leaves spring. The first kind is full and round; the second, smaller, and more pointed; and the third, both in size and shape, forming a medium between the two. The relative position of the different parts of the flower-bud, is called their *Æstivation* or summer state, in opposition to that given to leaves in *Vernation* or spring state. The many varieties distinguished by botanists may be reduced to two, the *spiral* and the *valvular*. In the first of these the same arrangements hold as in the leaves, plates of which are unnecessary, as those of the leaves will answer the same purpose for illustration; in the *valvular*, the leaves of the calyx or corolla are disposed in a true circle, without overlapping, and the edges alone consequently brought into contact.

The number of the sepals and petals is distinguished by prefixing to their names the proper Greek numerals. Sometimes either or both of these taper into a long, narrow stalk, somewhat like the petiole of a leaf; the narrow portion is called the *claw*, and that expanded the *limb*. In fig. 4th, A is the *claw* and B the *limb*; this form prevails in the Cruciferous tribe, pinks, &c.

A corolla with one undivided petal, no matter how arranged, is called monopetalous (*monos*, one; *petal*, blossom leaf), and of any number more than one, polypetalous (many petals); this last term generally expresses the absence of *cohesion*, whatever is

the number. Fig. 3d shows the first kind of corolla ; fig. 4th the second. The floral envelopes, taken together, are called the Perianth, see B in fig. 3.

The staminate system of a flower is called the ANDRÆCIUM, the pistillate system the GYNÆCIUM. In fig. 1st we have the flower with the corolla, Andræcium and Gynæcium. A, The petals of the corolla ; b, the germen or ovary ; c, the style ; d, the stigma ; e, the filaments ; f, the antheræ. The pistillum and stamna separate in fig. 2 ; b, the germen ; c, the style ; d, the stigma ; ee, the filaments, with the antheræ bursting and discharging the pollen.

The Receptacle is that termination of the flower-stalk upon which are inserted, or rather grow out of, all the parts of the flower. It should be understood that only the stamens and pistils are *essential* to the flower ; all other parts may be dispensed with, without, as far as we know, in any way injuring the seed. All the different organs arise from the receptacle in successive series, one within or above the other ; where the point of *insertion* is easily observed, the calyx, corolla and stamens are said to be *hypogynous*, that is, below the pistil. When the petals and stamens are inserted upon the calyx, they are said to be *perigynous*, around the pistil. When all the surrounding parts are consolidated with the ovary, and seem to grow from its summit, they are said to be *epigynous* upon the pistil. These explanations are, in part, necessary to understand fully the synopsis we have given of the Natural System.

A Spatha is a sheathing calyx, opening lengthwise, on one side, and consisting of one or more valves ; generally proceeding from it, is an elongated receptacle of flowers, called a spadix. The common Arum affords an instance of this, known to every one ; there is a beautiful specimen of the kind now in bloom in possession of our friend Mrs. Watson. Phillips remarks, that its alabaster white calyx, expanding into so elegant a vase-like shape, seems a fitting present from Flora to the hand of Hebe, when she presents the imperial nectar to Jupiter. Its appearance in a group of plants reminds us of a beautiful antique lamp for burning incense, which allusion the flame-colored spadix, arising out of the centre of the white calyx, considerably increases. Fig. 5 shows a Narcissus issuing from its spatha. A, the flower ; B, the spatha.

The calyx of the grasses is called a *glume*, from a Latin word, meaning a husk. Fig. 9 shows this—A, is the glume; B, the awista or awn. In the oat and wheat this forms the chaff, which is used for various purposes of stuffing; these are considered by some as only membranous bracts. These awns are sometimes employed as *hygrometers*. To do this, Comstock directs that the middle part of the awn, which is twisted or formed like a screw, must be used, one end of it to be cemented to the centre of a circular plate, which is marked off into degrees; to the other end, a bristle, to serve as an index, must be attached. The whole being covered with a glass, forms a hygrometer or moisture measure. When the weather is damp or rainy, the awn untwists and moves the hand in one direction, but as the atmosphere becomes dry it ceases at first to move, and then turns in a contrary direction. The moisture of the hand will set these awns in motion, making them appear like living animals.

CALYPTRA, a cap or hood, is the kind of calyx found only among mosses. Fig. 7th shows the fructification of a moss. A, the Calyptra. It is a veil of a conical shape, resembling a thimble.

The Volva, or wrapper, of a mushroom, is shown in fig. 8. A is the volva. As the plant grows and becomes larger, it bursts its wrapper, which remains around it in the form of a ring, as seen in our figure.

Fig 11, at A, shows a Bractea accompanying the flowers of the Tilia.

INFLORESCENCE, as Lindley observes, signifies the ramification of that part of the plant intended for reproduction. It has various methods of flowering distinguished by different names, of which we shall mention a few; and first, an UMBEL. This is produced when several peduncles or flower-stems proceed from a common centre, in a whorl, like the braces of an inverted umbrella, and reaching the same height, form nearly a level head of flowers. Carrot, dill and fennel are examples of this. Fig. 10 shows a compound Umbel. A, the universal Umbel; B, the Umbellula or partial Umbels; C, the universal Involucrum, which wrapper is so called when it belongs equally to the whole of an aggregate flower; D, the partial Involucrum enclosing several sets of florets.

An AMENTUM is an assemblage of flowers, composed of scales

and stamens or pistils, arranged along a common thread-like receptacle, as in the chestnut and willow; these scales are all calyxes. See fig. 6. The common name for this is catkin; the whole usually fall off in a single piece after flowering.

A RACEME, fig. 19, consists of numerous scattered flowers, each on its proper stem, proceeding from a common stalk, and generally pendulous. The lowest flowers being the oldest, are the first to expand, and the others follow in regular succession; the fruit is often produced and ripened before the summit has ceased bearing new flowers. Ex. Grape, currant and pokeweed.

A VERTICILLIS or whorl is when the flowers are sessile or on very short petioles, forming a ring at intervals around the stem. The mint is an instance; sometimes they are only opposite, and not continued round the stem, as in the dead nettle. Leaves are said to be stellate, star-like, when inserted in this manner. No. 15 is a Verticillis (Latin, *vertō*, to turn).

The CORYMBUS or false Umbel, is formed when the same appearance is presented as in the Umbel, but the flower-stalks, instead of rising from a common centre, are produced from different heights: consequently the lower ones are long and the upper ones short. See fig. 13. It prevails in the yarrow, spear-leaved golden rod, &c.

A SPIKE is an assemblage of sessile flowers, or those with extremely short peduncles arising from a common stalk, being the same as a Raceme, except the want of stalks in the flowers. The lowest blossom and die before the upper range begin to expand. When very closely crowded, as in the Indian corn, an ear is formed. See fig. 23. Ex. Barley, Virginian Speedwell, &c.

A CYME, like an Umbel, has its flower-stalk springing from a common centre, but differs from it in their being sub-divided; the snowball and elder afford familiar examples; but the most beautiful specimen of the kind is perhaps that of the *Laurestinus*. Fig. 26.

The PANICLE is formed similar to a Raceme, differing from it in the sub-divisions of the foot-stalks. It is sometimes composed of small spikes fixed by separate stalks to a common stem. The oat is a common example, see fig. 27. When contracted, of a somewhat pyramidal form and oval, it is

called a THYRSE, as in the lilac, horse-chestnut, bunch of grapes, &c.

In vol. i., page 15, of this work, we spoke of the NECTARY, its various forms and uses. Fig. 16, AA, is the Horned Nectaria in the Aconitum; BB, two peduncles that support them. Fig. 22. A Nectarium that crowns the corolla shown in the cup of a Narcissus. Fig. 24. A calcynine nectarium shown in the flower of a Tropæolum; A, the nectarium. Fig. 25 shows one of singular construction, shown in the flower of the Parnassia. A fine heart-shaped Nectaria, terminated by threads, each of which is crowned with a little ball. Some suppose the nectar is for the nourishment of the stamens and pistils.

It is said that no less than one-twelfth the vegetable kingdom is constituted by those flowers which grow in heads, formerly called compound, which last name is now applied to the family of Syngenesia. An immense host of little tiny perfect flowers, requiring the microscope for a fair view, is crowded together in these heads. Fig. 7 shows a paleaceous receptacle of a compound flower, shown in Rudbeckia. AA, the Paleæ or chaff which shoots up from beneath each floret, parting it also from all the others on the disk. B, the tubulose florets of the disk, so called from its shape (tube-like). In fig. 20, it is separated, so as to be more fully examined. C is the ligulate (strap-like) corolla of the radius; D, one of these fallen off. The sunflower is perhaps as good an example as any of this kind.

As we have sufficiently observed the different modes in which the flower makes its appearance, and observed it in all its various stages, let us again examine nature, and discover what she designs to accomplish after making such great show. When the proper time elapses, the anther box becomes filled with a rich store of carefully prepared POLLEN. Every one is acquainted with its general yellow, flowery appearance; though not confined to this color, as it is sometimes white, red, blue, &c. We have just placed some under a compound microscope; it has lost its dusty appearance, each atom resolves itself into an egg-shaped body, from which proceeds a little string; this form is always the same in every species, differing in a determinate manner in separate families. Pouring a little water upon it, it swells, and the true shape becomes perceptible; the water is rapidly absorbed until it bursts and discharges from it an

elastic vapor. This is seen in fig. 12 ; A, the pollen under the microscope ; B, the elastic vapor discharging from it. The active motion exhibited in the minute particles while in this state has given rise to a great number of foolish theories. It is a mere mechanical motion owing to the absorption of the water. Dr. Martyn Paine observed, that "microscopical deceptions and microscopical phenomena have become technical terms among those that employ this instrument most." Mr. Hunter states, that "as the naked eye, when viewing an object rather too small for it, is not to be trusted, it is much less to be depended on, when viewing an object infinitely smaller, brought to the same magnitude by a glass."

Flint says, that nothing is more charming than this diffusion in the fructification of our maize, the most beautiful vegetation that any country can offer. When the southwest breeze whispers, and a slight humidity inspires a voluptuous languor, in riding by these noble fields of maize, the pollen floats along the forest spikes, like a delicious shower of aroma, with a fragrance more delightful than ever breezed from the spicy fields of Araby the blest. Then the different kinds growing near each other are intermixed upon the same ear. What is called the silk of the ear conveys the pollen to the kernel and fructifies it. Where there is not a silken thread to convey the pollen to the kernel, it will be found wanting. It is certainly a most interesting fact in vegetable nature, that this dust shed by the stamen upon the pistil is a necessary condition of the fecundation of plants, in virtue of which they produce those seeds or eggs that reproduce their kind.

When this process of fructification is finished, every part of the flower not destined to help form the fruit, withers and disappears. Recalling to remembrance the fact of all parts of the flower being in reality nothing but metamorphosed leaves, we must look at the pistil as one folded inwards and united at the margin ; the line formed by this union is called the *ventral suture*, or inner seam, and always looks to the axes of the flower. Inside this leaf, which is thus placed to guard them, is a number of little bodies called ovules or eggs. As the fruit bears the name of carpel, the covering of its germ is called a pericarp. As the seed enlarges, the vessel in which it was contained enlarges with it, and after a time assumes the appearance of fruit.

This structure is easily discernible in the pod of a pea; the under surface rough and downy, covered with stomata, and acting like all ordinary leaves upon the air (which is a property common to all leaves, no matter how transformed, while they expose the chlorophylle by retaining the green color), is called the *epicarp*; the upper surface forms the delicate skin that lines the interior of the pod, and is named the *endocarp*; the middle juicy portion is the *mesocarp*. Fixing this simple explanation in the mind will be the means of clearing up every difficulty relative to the formation of the fruit. [*Carpos* is the Greek name for fruit; *Epi* means upon or over; *Endo*, the inside; *Meso*, the middle; *Peri*, around.] See fig. 32. A, 'The under sutures, along which are fixed the seeds; fig. 33, A and B, the two sutures to which the seeds are fastened alternately.

The peach shows by its hairy skin, the *epicarp*, or under surface of the original leaf; the juicy part is nothing more than an enlargement of the *mesocarp*; and the contracted fibres of the original upper surface of the leaf, now called the *endocarp*, become indurated, and are at length converted into a shell or hollow stone, to afford a more secure shelter for the seed. A DRUPE or stone fruit, as this class is named, shows the contraction of the endocarp by the wrinkles and seams with which the stone is covered. Fig. 36 shows a drupe; A is the nucleus or stone; B, the pulp or enlarged mesocarp. Belonging to the drupes is the almond and cocoanut, which differ from the peach in having the mesocarp assume the form and texture of coarse, woody fibres instead of a pulpy mass. The cocoanut is a tree of the palm kind; the husk of the nut is as large as a man's head; when the cocoanuts have just fallen from the tree, which they do when ripe, with the least motion of the wind, they are the most delicious luxury of the torrid regions. Very little idea can be formed of either the taste or internal appearance, from the manner in which we receive them. When cracked directly after falling, the inside, although white and without apparent seeds, looks somewhat like an orange; it is completely filled with cells holding liquor; these gradually dry up and cling to the sides, forming the white pulpy substance which we see; the liquor runs free; it is a foolish idea that it is absorbed by the white pulp,—that only can be done when diseased; consequently cocoanuts without liquor should not be eaten.

A POME is another form of the fruit in which the carpels are united with each other and with the calyx ; the whole is invested with the thickened and juicy tube of the calyx ; all such fruits are known by the eye at the summit, consisting of the leaves. Of this kind is the apple, pear, quince, &c. Fig. 37 shows a Pome ; A, the capsule ; B, the pulp.

A BERRY has its *mesocarp* soft and juicy ; the *endocarp* becoming absorbed when the fruit is ripe. Fig. 38. A, the seeds ; B, the pulp.

A STROBILUS or cone is merely a hardened catkin, enlarged into a seed-vessel. Fig. 30. This is seen in the pine, cypress, and fir tree. These consist of the numerous assemblage of a number of separate flowers on a common receptacle or head. They are separated from each other by bractæ or floral leaves which, remaining after flowering, are changed into a kind of scales to serve as a protection for the seeds ; lying over each other like the shingles of a house, they afford a perfect and extremely simple as well as ingenious mode of protection. A well known example of this kind is afforded in the pineapple. The stalk serves as an axis on which a great number of flowers that grow directly from it, without stems, are congregated together ; as the fruit grows, it becomes united or soldered with its neighbors adjacent ; traces of each, however, can be detected by the protuberances on the summit. A crown of leaves surmounts the whole, giving us the appearance of a single fruit, for which it would be unhesitatingly taken by a person unacquainted with botany.

In fig. 14 is shown the fruit of a lily. A, the valvules of the capsule : B, a seed ; C, the arillus opened to discover the seed.

Many modes of classifying fruits have been adopted ; we will give Mirbel's as a sample.

FIRST CLASS—NAKED FRUITS.

ORDER 1st. Simple fruits remaining closed.

- " 2d. " " opening at maturity.
- " 3d. " " dividing into many parts when ripe.
- " 4th. Compound " proceeding from a germ to which the style adheres
- " 5th. " " " " " not bearing the style.
- " 6th. Simple and succulent fruits contained in a nut.
- " 7th. " " " " containing many separate seeds.



E. H. Wilson

'TULIP, WHITE LILY, FUCHSIA.'

SECOND CLASS has few COVERED FRUITS.

"Lo on each seed, within its slender rind,
Life's golden threads in endless circles wind ;
Maze within maze, the lucid webs are rolled,
And as they burst, the living flame unfold.
The pulpy acorn, ere it swells, contains
The oak's vast branches in its milky veins ;
Each ravelled bud, fine film, and fibre line,
Traced with nice pencil on the small design.
The young narcissus in its bulb compressed,
Cradles a second nestling on its breast,
In whose fine arms a younger embryo lies,
Folds its thin leaves, and shuts its floret-eyes.
Grain within grain, successive harvests dwell,
And boundless forests slumber in a shell."

The Tulip.

THIS flower, so much admired in the eastern parts of the world on account of its splendor and variety, has from time immemorial been made the emblem by which a young Persian makes a declaration of love. Chardin tells us that, when these young turbaned swains present a Tulip to their mistress, it is their intention to convey to her the idea that, like this flower, they have a countenance all on fire and a heart reduced to a coal. Phillips tells us also that the Turks regard this flower with so much delight, that a feast of Tulips is celebrated annually in the Grand Seignor's seraglio, the description of which, when related to us in the flowery garb of their language, leaves even the delineation of the fairy scenes of the Arabian Nights tales in the shade. Vases of the purest crystal, filled with the gayest Tulips the world produces, are scattered over the scene, like the stars which look down upon them for number; galleries, amphitheatres, and pagodas, are erected, and covered with lights that present to the imagination the sparkling of every jewel which nature has produced or art polished; showers of rose-water refresh the air, and the very tapers shed the most exquisite odors, and the banks are covered with carpets, whose colors are as vivid as the

clouds which surround the setting sun ; pyramids of cooling fruits meet the eye at every turn, whilst innumerable birds of song, whose golden cages are suspended by strings of pearl, seem to mistake the scene for the arrival of Phœbus, and being awaked by the delights of the feast, mix their warblings with the melodious sounds of the instruments, which seem touched by invisible musicians.

In the centre of the seraglio, a splendid pavilion shades the Sultan, who carelessly reposes on the skins of the most costly and curious animals, with all the nobles of the court in their richest robes and shawls seated at his feet, to behold the winding dances of the lovely women, in all the luxurious display of their light and sparkling attire, who sometimes encircle and at others glide around the vases of Tulips, whose beauty they celebrate in song and action. During these festivals, Cupid often urges his votaries to dare the bowstring of the Sultan, by making a sighing Selim present a Tulip to a languishing Fatima. This gay flower having been obtained from the Turks, was called TULIPA, from the resemblance of its corolla to the eastern head-dress called *Tulipan*, or *turban*, and from hence our name Tulip, as well as those of the French *Tulipe*, the Italian *Tulipano* and the German *Tulpe*. Moore alludes to this similarity in his *Lalla Rookh*.

What triumph crowns the rich Divan to-day
With turbaned heads of every hue and race,
Bowing before that veiled and awful face ;
Like Tulip-beds of different shape and dyes,
Bending beneath the invisible west wind's sighs.

We are not able to discover any mention of the Tulip in the works of Pliny, which induces us to think that it is not an indigenous plant of the Levant, but that it was introduced from Persia and other eastern parts in later days, and that it has since so naturalized itself as to appear indigenous. Where the climate allows the Tulip to propagate itself by seed so readily as in the neighborhood of the Levant, it is not extraordinary that it should be found growing in the wild state, as it is frequently discovered in the vicinity of Constantinople. Mr. Hobhouse tells us he found the Tulip growing spontaneously under the hedges between Smyrna and Bournabat. But this flower appears to have been scarce at Constantinople even so

late as the middle of the sixteenth century, as in the year 1554 seeds and bulbs of the Tulip were sent to Vienna with an observation that they cost an enormous price. Gesner tells us considerable about the Tulip, and that he saw it at Augsburg; and from him a species very common and well known in the United States has been named the *T. GESNERIANA*. Clusius tells us, that a friend who had received a quantity of Tulip bulbs committed them to his care, but thinking they were worthless he threw them in a heap together on the ground, where to his astonishment they produced a great variety of flowers. He also gave more than a hundred of them to an apothecary at Vienna, to be preserved in sugar, in the same manner as the roots of the orchis, in order to ascertain if they possessed not the same qualities. A merchant of Amsterdam had a cargo of Tulip roots as early as 1562, and taking them for a sort of onion, ordered some to be roasted under embers and ate them with oil and vinegar, as such; the rest he set in the kitchen garden among the cabbages, where most of them perished, except a few that George Pye, a merchant of Mechlin, took under his care, which produced a variety of beautiful flowers. It is also related that a sailor having taken some goods to a Dutch merchant, had a herring given him for his breakfast, but seeing what he supposed to be a kind of small onions lying on the counter, the tar carelessly took up a handful, which he ate with his fish. These proved to have been tulips of such value that it was estimated a magnificent breakfast might have been given to the heads of the Dutch government for less expense than the cost of the condiment which the sailor so inadvertently took with his herring. It was introduced into England in 1578, when its sceptre was under the sway of a female monarch, who encouraged such importations. It was towards the middle of the seventeenth century that the rage for flowers, and particularly for Tulips, was carried to such excess both in Holland and France as to produce bankruptcy and ruin to many families; it would be almost impossible for us to credit the extraordinary accounts handed down respecting these gambling speculations. Betting to a ruinous amount was often made respecting the eventual superiority of promising seedling bulbs; and for the possession of breeders of high merit, from which fine seedlings might be expected, as large a sum was given as the fleetest race-horse of the turf ever sold for. About the year

1636, this spirit of floral gambling was carried to such excess at Haarlem, that during three years it is said to have yielded that city a sum not less than fifty millions of dollars, for the price of these bulbs rose higher than that of the most precious metal. Sixteen, eighteen, and twenty-five thousand dollars was no wonderful price for some single roots. We are told of a person who possessed a very fine Tulip, but finding there was a second root of the same kind in Haarlem, he repaired to that place, which after having purchased, at an enormous price, he placed on a flag-stone and pounded to a mummy with his foot, exclaiming with exultation, "*Now my Tulip is unique!*" The Dutch government was at length obliged to issue a proclamation to suppress the ruinous excess of the votaries of Flora. In Paris it was equally extravagant, but more fleeting; the troubles in England preventing the infection reaching that country.

As the Tulip is rarely propagated by seed in this country, we shall briefly explain the nature of a breeder. It is a bulb which has attained maturity, but is not too aged to have lost its vigor, and which is yet considered at its zenith in the eighth or ninth year from the seed. When such a Tulip throws up a strong tall stem, headed by large petals, blunt or rounded at the end; and if it be self-colored, or of one uniform equal color, on both sides of the petals; or if the base be either pure white, or bright yellow, and the anthers and stigma black or very dark, it is accounted a breeder of first rate qualities; and the bulb of such a breeder is planted deeper than usual in a sheltered and sunny situation, and the greatest care taken to prevent its leaves from being injured by wind or hail; the stem is tied to a stake, the corollas protected from the scorching rays of the sun as from the rain, and the perfecting of the capsule encouraged; the seeds are carefully gathered when ripe, and from these seeds, in the course of years, many fine varieties of flowers are expected, partaking of the fundamental good properties of the breeder. When the self-color of the petals of a breeder begins to break, the bulb is regarded as past its highest vigor, and no judicious florist will ever use it, but cut off the capsules as soon as the flowers have decayed, to prevent an unnecessary expenditure of the juices of the bulbs.

The criterion of a perfect Tulip of the late flowering kind is,

that the stem should be strong, elastic, and about thirty inches above the surface of the bed. The flower should be large, and composed of six petals ; these should proceed a little horizontally at first, and then turn upwards, forming almost a perfect cup, with a round bottom, rather wider at the top. The three exterior petals should be rather larger than the three interior ones, and broader at the base ; all the petals should have perfectly entire edges, free from notch or serrature ; the top of each should be broad and well rounded ; the ground color of the flower at the bottom of the cup should be clear white, or yellow, and the variously rich colored stripes which are the principal ornament of a fine Tulip, should be regular, bold, and distinct on the margin, and terminate in fine broken points, elegantly feathered or pencilled. The centre of each leaf should contain one or more bold blotches or stripes, intermixed with small portions of the original or breeder color, abruptly broken into many irregular, obtuse points. Some florists are of opinion that the central stripes or blotches do not contribute to the beauty and elegance of the Tulip, unless confined to a narrow stripe exactly down the centre, and that it should be free from any remains of the original color. It is certain that such appear very beautiful and delicate ; but the greatest connoisseurs agree that it is best to have an abundance of rich coloring distributed in a regular manner, except at the bottom of the cup, which, it cannot be disputed, should be a clear, bright white or yellow, free from stain or tinge, in order to constitute perfect flowers.

The Tulip, when raised from seed, differs so materially from the parent plant that we can never expect to procure the same variety but by the viviparous nature of the bulb. It has a solid bulb, and sends the stem from the centre, and is entirely exhausted in flowering and forming seed, and no part of the old bulb remains excepting the dry outer husk ; but the stem is attached to the stool of the bulb, to which is also fixed an entire new bulb ; so that, if dissected in the winter, the flower which was destined to charm the admiring eye the following spring, will be perfectly seen in miniature. The offsets are weaker and smaller bulbs, that require from two to four years before they produce flowers ; these should be separated from the large bulb when taken out of the ground ; but the small bulb that is formed under the husky coat, and which is the one that succeeds the flowering

bulb, should not be removed or injured. The young physiologist cannot have a better example given him of the harmony and unity of the various parts of a plant in its process towards performing its destined duties to nature, which are to propagate the species, than the Tulip presents ; for the most indifferent observer must be struck with the wonderful security with which the parts of fructification are guarded from the night air and tempestuous weather by the petals, which form themselves into the shape of an egg ; and so closely are they shut that neither damp air nor wind can enter to retard the formation of the pollen ; for sooner shall the wind snap the stem than separate the petals, although they regularly open to admit the rays of the sun to mature the parts that are necessary for the formation of the seed. In cold and ungenial seasons, the petals retain their concave shape, and act as so many reflectors to assist the ripening of the pollen ; whilst in dry and hot seasons the petals curl backwards, so as to throw off the too powerful rays of the sun, but continue to close towards sunset until the impregnation of the stigmas has taken place ; after which the petals decay and fall off, leaving the capsule to benefit by all the nourishment the stem affords, and to enjoy the light and air uninterrupted. Florists, who are careful of their choice Tulips, erect awnings over them, which causes the corolla to remain longer, although it retards the ripening of the pollen. Hogg recommends a fresh, rich, loamy soil, of rather a sandy nature, which should be dug at least twelve months before it is used, and to which a small portion of well rotted dung should be added. He tells us that an intelligent old Tulip grower assured him that the best was :—three-eighths rich yellow loam ; one-fourth leaf mould ; one-sixth horse manure, two years old ; and one-eighth sea sand, well incorporated and laid in a bed or stratum for plants, two feet deep. We have a decided objection to Tulip beds for pleasure gardens, on account of their formality and the blank that remains after flowering ; those not of the first quality may add greatly to the beauty of a garden when planted in clumps six and eighteen to a spot. Situations sheltered from the winds, and where a partial shade is afforded from the afternoon sun, are the best ; by this manner of planting, the vacant clumps will be filled up by the branches of later flowering plants. They should be allotted to the ground so as to embellish those spots most deficient in flowers at the season

of their blooming, which is confined to the months of May and June, except the dwarf early blooming Tulip, *T. SUAVEOLENS*, another of our exotics, which blossoms somewhat earlier. Phillips, from whom the most of the preceding is taken, says, the proper time for committing the bulbs to the ground is late in the fall, and a circular spot from two to three feet in diameter will be sufficient to plant eighteen bulbs. Having prepared the spots, lay little patches off, where each bulb is to be placed, and then cover with light sandy soil, piled above; lay the compost gently over the clump, covering the bulbs three inches higher than the rest of the border, so as not to retain rain. The brown coat of the bulb must be carefully taken off before doing this. The decay of the stem and leaves shows the time for taking up the bulbs, which should then be placed in a dry, airy, shaded situation, without touching their skins. The *Suaveolens* is the kind used for forcing in pots, and they prosper better in earth than water, for in the latter their bulbs uniformly perish after flowering. It belongs to the class Hexandria; order, Monogynia. The generic characters are: corol six-petalled, liliaceous; style, none; thick stigma, with an oblong, three-sided capsule. The **YELLOW EUROPEAN TULIP**—*TULIPA SYLVESTRIS*, has a very fragrant, just perceptible smell; it has a one-flowered, smooth stem, bearing a nodding flower, with sharp petals bearded at the end, and lance-shaped leaves. Their medicinal qualities entitle them to no consideration; though in common with the natural order, Liliaceæ, to which they belong, bitter and acrid principles may prevail in the buds.

The Lily.

AIMÉ MARTIN remarks that this delicate and beautiful flower has for centuries received its tribute of admiration from the lovers of nature. Who has not felt a glow of delight in perusing that gorgeous description of the Lily which Christ himself gave to his disciples? Of all the poetry ever drawn from flowers, none is so beautiful, none so sublime, none so imbued with the very spirit

in which they are made as that of our Lord : "And why take ye thought for raiment ? consider the Lilies of the field how they grow : they toil not, neither do they spin, and yet, I say unto you, Solomon in all his glory was not arrayed like unto one of these. Wherefore, if God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, shall He not much more clothe ye, O ye of little faith !" Phillips remarks, that the **LILIUM CANDIDUM**—**WHITE LILY**, is indisputably a native of the Holy Land ; and that a flower of such magnificence of deportment and sweetness of odor should have early attracted the attention of the Greek and Roman naturalists, arises from a natural cause, since we find them as anxious to make additions to the plants of their country as the botanists of modern days. The easy propagation of the bulbs in those countries soon increased its numbers almost equal to the native plants of those delightful climates. The heathen nations held this flower in such high regard as to consecrate it to Juno, from whose milk it originally sprang. Jupiter wishing to render Hercules immortal, that he might rank him among the divinities, prevailed on Juno to take a deep draught of nectar prepared by Somnus ; the queen of the gods fell immediately into a profound slumber, and Jupiter placed the infant Hercules to her breast, in order that the divine milk might enter his frame and cause the desired immortality. The infant, enjoying the delights of the celestial breast, drew the milk faster than he could swallow, some drops of which, therefore, fell to the earth, from whence this flower immediately sprang up, from whence arose its name of Juno's Rose. Aloist tells us that Celestial Beauty is represented surrounded by a glory, half of the head hidden in the clouds, holding a Lily in one hand and a compass and ball in the other ; Earthly Beauty is represented by a garland of Lilies and Violets. All nations agree in making this flower the symbol of **PURITY** and **MODESTY**, and it is, as we before stated, the emblem of **BEAUTY** ; and perhaps no inhabitants of the earth blend it so happily as the ladies of our own country. In the Hebrew language, the name Susannah signifies a Lily. It is related by Bayle that Charles the Fifth, in his religious retirement, planted a Lily, at the end of August, 1558. The monarch died on the twenty-first of the following month, and it is pretended that, at the moment of his death, the bulb of this Lily shot out a stem on a sudden, with two joints, supporting

flowers as odoriferous as these flowers are in Spain at their usual season. This was cut, we are told, and placed upon the great altar of the church of St. Juste, on the borders of Castile. In England it was among the earliest exotics that graced the gardens, and probably one of the plants gained from Palestine, by means of the early crusaders. It appears to have been a great favorite with the ancient Greeks ; and in the wedding ceremonies of the modern ones, the priest is supplied with two chaplets of Lilies and ears of corn, which he places on the heads of the bride and bridegroom, as emblems of purity and abundance. The Romans regarded it with equal admiration ; it was planted by them in baskets. Pliny mentions it as next to the rose in beauty, and says, the root, when dry, was frequently steeped in purple wine, in order to produce purple flowers ; the success of which plan we are not aware of. The white Lily is of so easy a cultivation that it will prosper in almost any soil or situation ; and as it readily increases by offsets from the parent bulb, it is become a common inmate in most cottage gardens, and held in less esteem than many inferior flowers which the difficulty of propagation renders rare, and consequently valuable. The offsets should be removed from the old bulb every third year, and the month of August is the proper season for transplanting them. They should be covered with about five inches of earth, but on no account removed in the spring of the year, as this is found to check their flowering for several years. As this species sends up a stem from three to four feet in height, it is better calculated to plant amongst shrubs than in the small quarters of the flower garden ; and when mixed with clumps of roses, the effect is as agreeable to the eye as appropriate to the emblematic combination of Purity and Beauty. It gives a great relief and cheerfulness to heavy clumps of evergreens, and is a charming accompaniment to borders of woods or wilderness scenery. It continues in flower from the middle of June to the middle of August, and as its fragrance is of an agreeable kind in the open air, no garden should be without this noble and highly ornamental flower.

The Lily belongs to the class Hexandria, order Monogynia, and is the type of the natural order Liliaceæ. The generic name is of obscure origin, some deriving it from the Greek, meaning smooth and handsome. Its characters are : corolla

six-petalled, bell-shaped, with a longitudinal nectareous line; capsules, the valves of which are connected by cancellated hair. *Candidum* comes from the Latin, *candido*, to bleach or make white. According to Nuttall, the United States affords five or six of these species, which generally affect low and rich meadows, or fertile shady woods and thickets.

LILIUM BULBIFERUM—ORANGE LILY. This flower, although less elegant in its shape, and entirely destitute of fragrance, is a great ornament to the garden, both on account of its stately height, occasioning the name of Superb, and its orange colored petals. We have many varieties of this species of Lily, some of which are of so great antiquity as to be thought natives of the British soil, from which they were introduced. It is found wild in Austria, Italy, and other southern parts of Europe; also in Siberia and Japan. The orange Lily has been known to produce double flowers, but this variety is not permanent. Some years back a bulb produced double flowers in a garden near Ghent, but in the succeeding year it returned to its natural shape, and then again blossomed with double corollas, after which it was entirely lost. The trivial name of *Bulbiferum* is given to this Lily from a singular gift of nature which some of the varieties of this flower possess, that is, of having three distinct modes of propagating its species; first, by its oviparous power of producing seeds or vegetable eggs; secondly, by its viviparous nature in throwing off young bulbs, or perfect bodies, from the side of the parent bulb; and thirdly, by a bulbous bud which is formed in the angle between each leaf and the stem, and which at maturity drops off, and taking root in the earth, swells out into the scaly bud peculiar to Lilies only. This kind will prosper in situations that are partially shaded, which makes it particularly desirable for planting among flowering shrubs, so as to fill up the vacancies occasioned by the fall of the lilac and laburnum. It is not delicate as to soil, but it flowers strongest in a soft, gentle loam, not too moist. The bulbs should be planted in clumps, five in each, separated at about two feet distance each way, and covered with about five inches of mould.

The **LILIUM SUPERBUM** is one of our own native species, but one which has received the utmost attention from our transatlantic neighbors, to whose notice it was first introduced in 1727. It is certainly one of the most magnificent of the American

plants. Beautiful and rich as many of them confessedly are, this exceeds them all, bearing as it does a pyramid of yellowish red flowers, from twenty to fifty in number, in full bloom in the early part of July. As this is rather more tender than most of the other Lilies, it is advisable to cover the bulbs with old tanners' bark or coal ashes during the winter, which may be removed after the frost is over and before the plants appear above ground. Where these plants grow naturally and plentifully, the roots are frequently eaten as food, being first roasted under the embers. The ladies of Europe have long held in the highest esteem a cosmetic for the skin which is prepared from these flowers by means of a vapor bath. It is said to improve and preserve the freshness of the complexion, and remove pimples and freckles.

"The Lily's height bespoke command,
A fair imperial flower,
She seemed designed for Flora's hand,
The sceptre of her power."

Observe the rising Lily's snowy grace,
Observe the various vegetable race,
They neither toil nor spin, but careless grow,
Yet see how warm they blush ! how bright they glow !
What regal vestments can with them compare,
What king so shiny, and what queen so fair ?

It is not poets alone who half-worship flowers. What an enthusiastic devotion is that which sends a man from the attractions of home, the ties of neighborhood, the bonds of country, to range plains, valleys, hills and mountains, in search of a new flower! What a spirit must have animated hundreds of those botanists who have sacrificed every personal convenience and every selfish motive for the sake of illustrating the volume of nature, and opening almost a new existence upon those whose researches are necessarily limited. No wonder that the most lovely ornament for the young virgin was a wreath of flowers; the most glorious distinction of the warrior a chaplet of bays. No wonder that the bier of the early dead was strewn with these passing emblems of a passing existence.—T.Y.A.S.

The Fuchsia.

THIS belongs to the natural order Onagraceæ ; all the species are American, though principally found in the southern continent ; a few came from the West Indies. It is in the class Octandria, order Monogynia ; the generic name was given in honor of Leonard Fuch, a famous German botanist of the sixteenth century, whose skill as an artist in the drawing of plants was considered unrivalled. We do not find that it bears any other name in Europe, nor has its original South American one been ascertained. Its characters are, calyx funnel-shaped, always closed, superior, and soon falling off ; it has four petals, often considered nectaries, which are in the throat of the calyx, alternately, consistently with the ideal type, with its divisions. Stigma four-sided and capitate ; it has an oblong four-celled berry containing numerous seeds.

THE FUCHSIA COCCINEA—LADIES' EAR-DROP—is, as Phillips remarks, a beautiful exotic plant, and although now cultivated in most parts of Europe, and in the civilized world, was unknown there until 1788, when it was presented to the Royal Garden at Kew, in England, whence it was afterwards distributed as a stove plant. From the stove it was removed to the green-house, and it is now found to be sufficiently hardy to stand in the open garden, if planted in warm situations where it is sheltered from the north by a wall or buildings ; and like the China roses which were for some years treated as tender plants, the Fuchsia is found to grow with greater luxuriance in the open air, than when nursed as a house plant. We have placed the Fuchsia in the language of flowers as the emblem of TASTE ; for with its richly colored blossoms there is a peculiar harmony and beauty in the unassuming appearance of the flowers, which hang with so much gracefulness from amongst the elegant shaped foliage of this plant. The length of the stamens also adds greatly to the beauty of these pendant blossoms, having the appearance of so many gems suspended from a small roll of the richest violet colored ribbon, over which the beautiful carmine calix hangs like a half expanded parachute, allowing only a glimpse of the purple petals to be seen between the openings, the whole being headed by an

emerald colored receptacle for the seed. The calyx buds, before they are expanded, have the appearance of ripe barberries; and the young branches and leaves of the plant have the berries tinged with the same fine crimson color, which contributes greatly to the beauty of the plants.

The Fuchsia grows from four to six feet in height; but when protected from the frost it is frequently much higher. We have seen it in conservatories from ten to fifteen feet, having all the lower branches pruned off, and thus forming a tree of the most enchanting appearance; the least breath of air setting all the pendant flowers in graceful motion, an effect which cannot be given to the plant when kept as a shrub or trained to the wall. It loves a light rich earth; and is easily increased by cuttings planted under a bell-glass, in the same manner as myrtles are raised, observing to give air so as to prevent damping off. When a number of plants are required, it is more desirable to raise them from seed, which should be sown in pots of rich earth placed in a hot bed.

The Mallow.

Who cut up Mallows by the bushes, and Juniper roots for their meat.

JOB XXX. 4.

PHILLIPS remarks, that from the above exclamation of Job, we learn that the Mallow afforded food in early times, to those wandering tribes that have ever preferred to pitch their tents in the wilderness, and depend upon the spontaneous productions of the earth for their subsistence, rather than dwell in the settled habitations where they would be expected to assist in the labor of multiplying the gifts of nature. The name is thought to be derived from the Hebrew word for salt, given on account of its saline properties, though some are of opinion that it was derived from a Greek word, on account of its softening and laxative properties, and quote Horace to prove the Roman method of using it. The Greeks also ate this plant both boiled and raw in salads, with lettuce and other vegetables, and the Chinese and Egyptians still use a species of it in their diet. It formed one



MALVA SYLVESTRIS.

(Mallow.)

Drawing prepared for J. H. Willman

of the funeral flowers of the ancients, it being customary to plant it around the graves and tombs of departed friends. It has been made, in floral language, the emblem of a MILD and SWEET DISPOSITION.

It is the type of the natural order Malvaceæ, which are herbs with arboreous, shrubby, or herbaceous stems; rough fibred bark; the leaves with stipules alternate, mostly simple, occasionally digitate; the flowers axillary or terminal, very rarely with imperfectly separated organs. It is in the class Monadelphia, order Polyandria. Its generic characters are: Calyx double, outer three-leaved; capsules many; united in a depressed whorl; one-celled; one-seeded.

Pliny tells of two kinds of Mallows that were cultivated in the gardens of the Romans, which he says were distinguished from the wild Mallow by the size of the leaves. He also tells us that the leaves of the marsh Mallow were used as a counter poison against the sting or bite of all venomous reptiles from the wasp to the serpent; and that the juice of Mallows given warm was a celebrated medicine for such as were gone melancholy or were deranged in mind. Mallows, he also tells us, were sown in the fields for the purpose of enriching the grounds.

The COMMON MALLOW—*MALVA SYLVESTRIS*—is a native of Europe; is the officinal article of our pharmacopœia. Although its blossoms so very frequently meet the eye, from its flowers succeeding each other from the month of May to the end of October, yet they never tire the sight, their petals being of a delicate reddish purple, sometimes varying to a white, or inclining to a bluish cast, with three or four darker streaks running from the base. It is fortunate for the husbandman that nature should allot this plant for the banks and borders of fields, rather than to scatter over meadows, since its spreading branches would in a great measure destroy the turf; and as cattle in general refuse to eat this plant, it would soon overrun and smother vegetation.

The *MALVA ROTUNDIFOLIA*—DWARF MALLOW—has been probably introduced, though it now grows wild. It is common in cultivated grounds and about houses and sidewalks, and, like the former species, continues in flower all summer. Its leaves are round, somewhat kidney-shaped, with imperfect lobes supported on long horny footstalks; the stipules, or appendages at their

base, lance-shaped and fringed with parallel hairs. Their flower-stalks are crowded together, much shorter than the leaf-stalks, hairy, and come out from the angle formed by the stem and branch. The leaves of the cup are egg-shaped on the inside, and long and narrow without; the blossom of a purplish white, deeply notched at the end; the fruit flat, the circumference containing numerous capsules. The Mallow is of easy culture in any garden soil; but in its native place, England, notwithstanding the strong recommendations of Gerard, one of their much admired authors, this hardy annual plant is banished entirely from the kitchen garden; but it is frequently seen among flowering shrubs, where the *MALVA CRISPA*—*SYRIAN CRISPED MALLOW*, has a good effect both by the singularity and agreeable pale color of its curiously curled and plaited leaves. The *Hortus Kewensis* notices thirty-four other exotic species that have been brought from various parts of the world. In England there are more than sixty species, some of them only humble herbs, while others are tall shrubs; and some of the tribe reach the height of large trees, the trunks measuring from twenty to thirty feet in diameter. Several beautiful species of the Mallow have been lately brought from the Cape of Good Hope, and are now under process of naturalization in both England and America. In the United States we have upwards of a dozen well defined species of the Mallow, four of which are exotic, and probably the one introduced last, its derivation uncertain.

The herbs and flowers of both the *Rotundifolia* and *Sylvestris* are the parts commonly employed; they have a slimy taste without smell, abounding in mucilage, which of course water will dissolve, and thus serve as a vehicle for extracting its active properties. By means of the infusion or tincture of the flowers, which is of a bright blue, the chemists test the presence of acids and alkalies, the former changing it to red and the latter to green. All parts of the plant of course partake of its mucilaginous nature; but the roots and seeds are seldom employed.

The infusion is useful in coughs and colds; it forms a good poultice, and is now and then employed in catarrhal, dysenteric, and nephritic complaints, for which purposes they will sometimes afford satisfactory results.

The Black Hellebore

THE HELLEBORUS NIGER—BLACK HELLEBORE, is a genus of the class Polyandria, order Polygynia. Its name is derived from the river Eleborus, by whose banks it grew profusely, and which was so called from the deadly nature of this plant seen in those who partook of it; its Greek derivatives meaning the Bread of Death. Its characters are:—calyx none; petals five, or more; nectaries two-lipped, tubular; capsules many-seeded. We have an officinal tincture of the root of this plant, prepared by pouring on two ounces of it, well bruised, two pints of half alcohol and half water, and after macerating fourteen days, to filter. Its resinous matter, volatile oil, &c., dissolve in the alcohol: and the gum, albumen, &c., dissolve in the water, and we have all its active properties. The dose is from thirty to sixty drops, night and morning, for amenorrhœa, and less as a tonic, *pro re natâ*. This root is knotted, black on the outside, whence its name *niger*, with many straw-like fibres, yellowish brown when fresh, but much darker upon drying. The leaf-stalks are quite long, springing directly from the root, bearing compound leaves, composed of five or more ranged opposite, with a terminal one; they are smooth, very shining, and serrated on their upper portion, of a leathery consistence, and ovate, lance-shape. The flower-stem, like that of the leaves, springs directly from the root, to the height of from seven to ten inches; it is round, growing rather smaller towards the top, and of a deep crimson at the base; the flowers are large and nodding, accompanied with floral leaves to answer the place of a flower-cup. The blossom-leaves are of a pale rose color, sometimes tinged with green. Phillips tells us that few plants have been more celebrated by the physicians of antiquity than the Hellebore, and hence it makes a conspicuous figure in the poetical fables of early writers; but it seems to have been entirely neglected by the English poets, and there is but little attention paid it by the American, who have in truth enough to do to celebrate their own floral gems without minding exotics. The BLACK HELLEBORE—HELLEBORUS NIGER, demands our attention, both from the early season of its flowering and the beauty of its blossom. It is generally called the Christ-

mas Rose, because it frequently expands its petals at that season, which having a resemblance to the common dog rose of our hedges, has gained it this name. Our caution is equally demanded against the whole of the Hellebore family of plants, on account of the dangerous properties of their roots and leaves, which are a most virulent poison. It is sometimes named after Melampus, who travelled into Egypt, which was the seat of science at that period, to study medicine. He afterwards cured the daughters of Prætus, king of Argos, of mental derangement, with Hellebore, and from this circumstance it became so famous a medicine for mad people that it was a common proverb used to hypochondriacal persons, "Sail to Anticyra," an island in the Gulf of Corinth, where it flourished in abundance. Melampus, it is said, became acquainted with its cathartic properties by observing its effects upon goats. The princesses he cured were ordered to bathe in a cold fountain after taking the medicine, and this is the first instance upon record of the use of cathartics and bathing with a medicinal view. Melampus gained still greater honor by correcting the defects of Iphiclus' constitution by prescribing the rust of iron to be taken in his wine for ten days successively. Thus we find the celebrated steel medicine of the present day was in use as long back as 3350 years. At that early period the physicians were held as a sacred order of men, and none durst profess physic in Egypt without being admitted a member of the College of Priests. They were also considered the soothsayers and prophets from their pretending to be assisted by incantations and charms, the origin of which arts seems almost coeval with physic itself; and these solemn mysteries were no doubt resorted to in order to create a veneration and faith in the minds of the patients for their physicians, which, however ridiculous to us, might have had great effect on the minds of the vulgar, as it is an established opinion that the body is often influenced by the affections of the mind. We have made this digression to show the origin of many of the Greek and Roman superstitious customs respecting plants.

The Black Hellebore was used by the ancients to purify their houses and hallow their dwellings; and they believed that strewing or perfuming their apartments with this plant would drive the evil spirit away. This ceremony was performed with great devotion, and accompanied with solemn hymns. In the same

manner they blessed their cattle with Hellebore, and kept them free from the spells of the wicked. For these purposes it was dug up with many religious ceremonies, as that of first drawing a circle round the plant with a sword, and then turning down to the East, an humble prayer was made by the devotee to Apollo and Esculapius for leave to dig up the root, and the flight of the eagle was particularly attended to during the ceremony of the rites, it being considered so ominous as to predict the certain death of the person who took up the plant in the course of the year. In digging up the roots of some species of Hellebore, it was thought necessary to eat garlic previously, to counteract the poisonous effluvia of the plant; yet we find that the root was afterwards dried and pounded to dust, and snuffed up in the nostrils in the manner of snuff, as it is related that when Carneades undertook to answer the books of Zeno, he sharpened his wit and quickened his spirit by purging his head with powdered Hellebore.

Notwithstanding the great reverence with which the ancients regarded this plant, it was considered by most of their writers as a rough medicine; and as many people are in the habit of giving the powders of Hellebore to their children for the worms, we shall show its dangerous properties by mentioning the case of Martyn:—"Some years ago, when the ground was covered with a deep snow, a flock of sheep in Oxmead, near Fulborn, in England, finding nothing but this herb above the snow, ate plentifully of it. They soon appeared terribly out of order, and most of them died, a few being saved by timely giving them some oil, which made them cast up this herb. I went to the spot, and as he pointed out the herb that poisoned them, I found it to be the species of Hellebore called *NIGER FÆTIDUS*"—our common BEAR'S FOOT, which is also a European herb, deriving its name from the offensive odor it exhales. This is the most acrid species in the genus; the leaves are the portion used, and although these are milder than the foot-stalks, yet when given to children, as we mentioned before, for worms, the most violent and distressing effects, sometimes terminating in death itself, ensue. In the hands of science it is hard to manage. It may be given either in powder or decoction. The dose for a child of from three to six or seven years old, is from five grains to a scruple of the dried leaves, or half a wine glass of a tea made by boiling a

drachm of the dried leaves in half a pint of water; this repeated for two or three days in succession will generally effect the expulsion of *tænia*, for which it has been highly recommended.

This reputed specific for the cure of melancholy and madness, was an inmate of the English gardens prior to 1597, as Gerard tells us that it was then growing in his own. Like the snow-drop, the Black Hellebore should be planted in considerable quantities to produce an effect; it loves a pure air, and will not therefore flourish in the precincts of very large cities, especially where much coal is used as fuel. It blossoms, with a yellow flower, in February, in cold seasons a little later, and is therefore a proper plant to give contrast to the snow-drop, either in wilderness walks or under trees in the shrubbery. It grows wild in mountainous situations in Lombardy, Italy, Austria, Siberia and Switzerland. It is called indiscriminately wolf's bane, aconite, &c.; and should never be allowed a place in the kitchen garden, since fatal accidents have arisen in mistaking this root for that of horse-radish. They may be propagated by parting the roots at any time between the months of June and October. In the neighborhood of Paris it is quite common to cultivate them in pots, as an ornament for the house. With every desire to caution the ignorant against the use of these dangerous plants, we cannot avoid recommending the faculty to turn their attention to this herb formerly so celebrated. Mr. Walker tells us "he remembers in the dépôt for French prisoners of war in England, in 1806, that a peculiar disease, called Nyctalopia, was prevalent among them. The symptoms which distinguish the disease are, that the patient becomes by degrees perfectly blind from the moment of sunset till the re-appearance of the sun next morning. This affected a great number of the prisoners, who were obliged to be led about by their comrades immediately after sunset, and all of them at the time were laboring under symptoms of extreme dyspepsia. After a variety of treatment had been ineffectually applied, the powder of Black Hellebore was given them as snuff; as most of them were attached to the use of this article, and had for a long time been deprived of it, they took the Hellebore with avidity, and generally recovered from their Nyctalopia in the course of a very few days, and the dyspepsia symptoms were at the same time greatly relieved. There is no doubt that in many affections of the head the

same treatment would be found extremely efficacious, and well worthy of trial in many chronic diseases of the eye, particularly in the early stage of gutta serena. Of this plant Juvenal sarcastically remarks, “*Danda est hellebori multò pars maxima avaris.*” The roots of the H. Viridis and H. Orientalis have been substituted for those of the H. Niger, but it is of little consequence, as their medicinal qualities are nearly alike.

The Thorn Apple.

THIS is in the natural order Solanaceæ, the class Pentandria, order Monogynia. Its generic characters are:—corolla funnel-form, plaited; calyx tubular, angular, deciduous; caps four-valved. Specific character: pericarp spinous, erect, ovate; leaves ovate, smooth. Some years ago, in this city, there was considerable excitement about this plant. A number of recently arrived German emigrants, unacquainted with its dangerous properties, boiled the leaves for table greens, and eat heartily of them, and the most disastrous results followed, ending in the death of two or three. It is said that, in some instances, the scenes recorded by Beverly were re-enacted. “This being an early plant, was gathered very young for a boiled salad, by some of the soldiers sent hither to quell the rebellion of Bacon, and some of them ate plentifully of it, the effect of which was a pleasant comedy, for they turned natural fools upon it for several days. One would throw up a feather in the air, another would dart straws at it with much fury; another, stark naked, was sitting up in a corner, like a monkey, grinning and making mows at them; a fourth would fondly kiss and paw his companions, and sneer in their faces with a countenance more antic than any in a Dutch droll. In this frantic condition they were confined, lest in their folly they should destroy themselves. A thousand simple tricks they played, and after eleven days returned to themselves again, not remembering anything that had passed.”

Last summer we were called to visit three children in one house, in Second street, near Avenue C, who had eaten of the plant. We found they all presented the same appearance, the



DATURA STRAMONIUM.

(Thorn Apple.)

Drawn expressly for J. F. Willmarth

most obvious symptoms were a peculiar noise in respiration, indicating some difficulty; a heavy, deep sleep, from which it was impossible to rouse them; a slow and full pulse, and cool skin, without any perspiration; when the lids of the eyes were lifted, a converging squint was strikingly perceptible; they were lying in this state then about twelve hours. As they had complained of considerable sickness at the stomach before sleep was induced, we followed out the indications of nature in prescribing a powerful dose of Ipecac; in a little while this operated, and, together with the warm bath, prompt application of mustard poultices to the feet, thighs, &c., they recovered in about four hours. No unfavorable effects remained, and before night they were all racing the streets ready for another mishap.

The *DATURA STRAMONIUM*—*THORN APPLE*, is an annual plant, from three to five, and sometimes seven feet in height, varying with the quality of the soil, as it is of rank and vigorous growth. The root is very large, light colored, and has numerous fibres; it sends up a straight, smooth stem, which, though simple below, is repeatedly forked above, and in the large plants, hollow. The leaves, the short round stalks of which come out from the forks of the stem, are from four to six inches in length, of a dark green color on the upper surface, and much paler beneath, somewhat triangular in shape, and irregularly toothed on the margins. The flowers are very large, solitary, standing on short foot-stalks, which come out from the angle formed by the leaf and branch; the calyx is five-angled, tube-shaped, supporting a funnel-shaped blossom, with a long tube and plaited border, which terminates in fine awl-shaped teeth. There are two varieties common with us, one having green stems and white flowers; and a dark reddish stem, minutely dotted with green and purplish flowers, striped with deep purple on the inside, which latter is the *D. TATULA*, of Linnæus, as Dr. Smith, upon examining the herbarium of Linnæus, found it was merely a variety of the other. The base of the flower-cup, after the other parts fall off, unites with the germen and becomes a part of the fruit. The capsule is four-valved and four-celled, oval-shaped, large and fleshy, and contains a great number of seeds, which, when ripe, are thrown out in all directions, and should make us very careful how we let it grow near our doors and gardens, for then it will be almost impossible to extirpate them. All parts of the plant

possess officinal properties, but the seeds and leaves are the most generally used ; the former are given in the dose of a grain twice a day ; of the extract made by evaporating the decoction, one-eighth to one-quarter of a grain : of the powdered leaves, two or three grains. Applied to the eye, it is equally useful with Belladonna for dilating the pupil, for which purpose it is used by surgeons, as well as in cases of irritable ulcers, inflamed tumors, swelling of the mammae, and hemorrhoidal affections.

“ Their flowers mysterious, let thy knowledge shift
The useful poison and their healing gift.”

Phillips remarks that in symbolical language the Datura is made the emblem of deceitful charms, and the common Stramonium is given to represent disagreement. This dangerous narcotic plant clothes itself with such an elegant indented foliage and garnishes its branches with corollas of so graceful and negligent a shape, and of so pure a white, that all suspicion of its deleterious nature seems lulled to rest, while, like the Lamiæ of old, its charms only allure that its powers may destroy. Children are no longer in danger of being devoured by the Lamiæ ; but they are not free from danger where the Stramonium flourishes, as we have known several instances of its baleful effects to young persons who have endeavored to chew this plant. We feel it the more necessary to caution the unwary against the dangers of this powerful plant, since it has had its medicinal virtues so much extolled as to induce the ignorant into a belief that it must naturally be an innocent and harmless vegetable ; but it should be impressed on the minds of persons in general that those plants which afford the most efficacious medicine in the hands of the skilful practitioner, are the most dangerous in those of the ignorant, and should therefore never be used as a household remedy. This is employed occasionally as an anodyne, on account of its narcotic properties not inducing constipation like opium. Its effects, however, are frequently formidable, and even fatal, when administered by the incautious. Swain mentions a case wherein a decoction of three of the capsules of the Stramonium in milk produced a paralysis of the whole body, so that the patient became mad. He continued seven hours in this situation, then came to himself and slept quietly the remainder of the night. Mr. J. A. Waller observes that a temporary madness is uniformly

the result of this poison. Keat records a case of a man who drank a decoction of the fruit, and became melancholy, lost his voice, his pulse disappeared, and the limbs became paralyzed ; after which madness came on. The smell alone of this plant causes inebriety, and it has been used for the most dreadful purposes in eastern countries. Garcias tell us that thieves mix it in the food of those they intend to rob ; and Acosta mentions that abandoned females frequently give it to their incautious gallants. In Java these unfortunate women take it themselves as a stimulus, and are so expert in its administration that they know how to temper it in such a way as to make its effects last for as many hours as they please. Indian princes have been known to make use of it to render their rivals stupid, and then to expose them to the people to show how incapable they were to govern. Waller observes in his Domestic Herbal that the fumes of this plant received like those of Tobacco have in no instance that he has heard of been productive of any ill effects ; whilst at the same time he says he had often witnessed the most beneficial results from its use in this manner in asthmas and old inveterate coughs. Some persons smoke the Stramonium alone, others mix it with tobacco. The most common method seems to be to make a mixture of one third part of the stalks, fruit, leaves and seeds of it properly dried, cut and bruised, and two thirds of tobacco. This plant is unquestionably a native of America. Kalm says, that in many parts of our extensive country, it is one of the most troublesome weeds that grow about the villages where the land is cultivated, and that it has been frequently observed in the earth brought with plants from various parts of our continent. The earliest English writers who have mentioned the Datura, call it the Thorny Apple of Peru. It appears to have travelled through the East Indies and Persia to Europe, as we find the seed was first brought from Constantinople to England, and presented to Gerard ; who observes that he made great use of the plant in his profession as a surgeon, not only for burns and scalds, but also for virulent and malign ulcers, apostemes, and such like. This author tells us that he dispersed the seeds of the plant through the land. We have thus a positive proof of the time of its introduction, and that its place is wrong in the catalogue of British plants. It has so far naturalized itself to the English soil, and some think it did so in

our own, that it is frequently found in waste places and on dung-heaps, and is often found a troublesome intruder into the parterre, for the seeds being dug into the earth will remain for several years, and vegetate when again turned up to the air. When sown on a rich soil the plants grow to a great size, which renders them unsuitable for the flower borders; but amongst flowering shrubs it has a good effect both by its large foliage and its long tubular flowers which appear from May to September, according to the latitude. In the natural history of the *Stramonium*, this singular provision of nature is observed, that at night the leaves nearest the flowers rise up and enclose them, so as to form a shelter from the humidity of the air. The generic name of *Datura*, by which the plant is known throughout Europe, is the original one by which it was received from the Turks. It is called *Thorn Apple* from the nature of its fruit. Nicolaus Monardes, a Spanish physician, tells us in his work published in 1564, that he received the first seeds of this plant from Peru, under the Indian name of *CACHOS*; and that it came strongly recommended to him as a medicinal plant, which the Indians, as well as the Spaniards in Peru, held in high estimation. The **PURPLE THORN APPLE—*DATURA FASTUOSA***—of which there is a variety with double flowers, is much more desirable for the garden than the common species. The flowers of this species are of a fine purple on their outside, and of a glossy white within. These have an agreeable odor for the moment, but if long inhaled become less pleasing. This species is a native of the East Indies and Egypt, and was first cultivated in England, by Mr. Miller, in the year 1731, and brought over some twenty years afterwards

It is not impossible to have a flower in bloom every day in the year; there is a book wherein each particular one is dedicated to a Roman Catholic Saint, and the successive times of its blooming described. This is Hone's *Every Day Book*, published in London, in 1826.

Garlands of Flowers.

BY HENRY PHILIPS, F.R.S.

THE interest which flowers have excited in the breast of man from the earliest ages to the present day, has never been confined to any particular class of society, or quarter of the globe. Nature seems to have scattered them over the world as a medicine to the mind, to give cheerfulness to the earth and furnish agreeable sensations to its inhabitants. The savage of the forest, in the joy of his heart, binds his brow with the native flowers of his woods, while their cultivation increases in every country in proportion as the blessings of civilisation extend. From the most humble cottage garden to the proudest parterre of the palace, nothing more conspicuously bespeaks the good taste of the possessor than a well cultivated flower garden; and it may generally be remarked, that when we see a neat cottage court well stocked with plants, the inhabitant is respectable and possesses domestic comforts; whilst, on the contrary, a neglected garden but too frequently marks the indolence and bespeaks the unhappy state of the owner.

Every rank of people seems equally to enjoy flowers as a gratification to the organs of sight and smell; but to the botanist and the close observer of nature, beauties are unfolded and displayed that cannot be conceived by the careless attention of the multitude, who regard these ornaments of nature as wild and savage persons would a watch; they are dazzled with the splendor of the case and the beauty of the appendages, but look no further, because they know not where to look. The artist, while he enjoys the external covering, looks into the interior, and as he regards the movements and learns their various uses, he is struck with admiration at the ingenuity of the mechanism. The botanist has the same delight when he looks into the blossoms of flowers, for he there beholds the wonderful works of the Al-

mighty with amazement—there he sees movements and regulations with which all the combined ingenuity of man cannot compare. We may learn from profane history how much the study of vegetables induces the mind to its proper sense of gratitude, and how much it created in the breasts of the heathen themselves a veneration and religious awe for the Author of all things; for although they were not blessed with a knowledge of pure religion, they had too much good sense to suppose that vegetation was a matter of chance; and they therefore attributed each gift of nature to some peculiar god, their minds not being sufficiently expanded to conceive a just idea of the Deity, except indeed those master-minds who traced, in the regularity and uniformity displayed in all organized nature, the hand of one supreme creator, and who adored him under the name of Pan, the universal spirit. The worship of Flora among those heathen nations may be traced up to very early days. She was an object of religious veneration among the Phocians and Sabines long before the foundation of Rome; and the early Greeks worshipped her under the name of Chloris. The Romans instituted a festival in honor of Flora as early as the time of Romulus, as a kind of rejoicing at the appearance of the blossoms, which they welcomed as the harbingers of fruits. The festival games or Floralia were not, however, regularly instituted until five hundred and sixteen years after the foundation of Rome, when, on consulting the celebrated books of the Sybil, it was ordained that the feast should be annually kept on the twenty-eighth day of April, four days before the kalends of May. These prophetic books had a college of priests appointed to undertake the charge of them, and were held in such reverence that they were never consulted unless the state was in danger, and then only with the greatest solemnity. From the writings of Pliny the elder, we learn that the worship of this goddess had been greatly neglected, and that it was not until after some unfruitful seasons that the Sybilline books were consulted, which ordained that the feast of Flora should be celebrated with regularity, so as to ensure the well-flowering and kindly-shedding of the blossoms of all species of plants.

This festival was introduced into Britain by the Romans, and was kept up as late as the time of Henry the Eighth. Flowers, among the Eastern nations, were not only used as a stimulus to

the palate, or that two senses might be gratified at the same time ; but it was thought that certain plants and flowers facilitated the functions of the brain, and assisted materially to neutralize the inebriating fumes of liquor. Even the warriors did not hesitate to crown themselves with flowers during the principal repast, which custom the Romans undoubtedly derived from the East. The most celebrated Parisian milliner is not more eagerly sough tafter in modern times than the plaiter of garlands was in the days of antiquity, if we may judge from the account which Pliny has handed down to us. The Sicyonians were considered to surpass all other people in arranging the colors of these garlands, and giving them the most agreeable mixture of perfumes, which art they derived from Glycera, a woman of great ingenuity among them. We are also told of two renowned Greek physicians who compiled several books on the virtues of chaplets, enumerating such as were hurtful to the brain, and others that refreshed the spirits. It was also a frequent custom among them to mix the flowers of their chaplets in their wine when they pledged the health of their friends, as the following anecdote will show. Notwithstanding the great pains which Cleopatra took to please and amuse Antony, it was a considerable time before she could gain his entire confidence, as it appears that he would never eat or drink at her table without causing his taster first to partake of every viand, in order to discover if treachery lurked disguised in the midst of the luxuries of this subtle queen. This jealousy seems to have increased about the time he was preparing his expedition against Augustus, when the artful beauty who had so captivated the warrior, took the following device to satisfy him of her true attachment, and at the same time ridicule his mistrust and timid fears. The queen had a chaplet of flowers prepared for Antony, the edges of which were dipped in the most deadly poison, whilst that which was formed for her own head was as usual mixed with aromatic spices. At the banquet, the general received his coronet of flowers, and when they had become cheerful through the aid of Bacchus, Cleopatra pledged him in wine, and taking off the garland from her head, and rubbing it in her goblet, drank off the contents. Antony was just following her example ; but just as he had got the fatal cup to his lips, the queen seized his arm, exclaiming, " Cease your jealous fears, and learn how I have not the means to seek of your

destruction, could I live without you ;” on which she ordered a prisoner to be brought before them who, on drinking the scented wine, instantly expired in their presence. The fondness which the ancients evinced for flowers was carried to such an excess as to become almost a vice. When Antony supped with the far-famed queen of Egypt, the floors of the apartments were generally covered with fragrant flowers ; and when Nero sat at banquet in his golden house, a shower of flowers and odorous essences fell upon him ; but Heliogabalus turned these vegetable beauties into curses, for it was one of the pleasures of this monster to smother his courtiers with flowers. The Italians who still retain some of the Roman customs, have artificers called *festaroli*, whose office it is to make garlands or festoons of flowers and other decorations for feasts. The Catholic Church still continues the use of flowers in its religious ceremonies ; as do the Chinese, who consider them grateful to the gods ; they hold some particular kinds in great veneration, especially the Eukeanthies, of which, at the commencement of every new year, when the plant is generally in blossom, large branches are placed in all the temples as an acceptable offering. The Mexicans, from time immemorial, have studied the cultivation of flowers and odoriferous plants, which they employed in the worship of the gods. Allusion in the history of flowers is often made to the celebrated Garland of Julia ; and it may not be improper to notice that it was a piece of ingenious gallantry of the Duke de Montausier towards the beautiful Julie de Rambouillet. After he had gained the promise of his mistress’ hand, he was, according to an ancient custom which in France is still observed, to send every morning to his future bride, till the wedding-day, a nosegay of the finest flowers of the season. But he did not stop here ; he had painted on vellum, by the best artists, in a folio volume magnificently bound, the finest cultivated flowers ; and all the most distinguished poets of the day divided amongst themselves the task of making verses upon the flowers. The great Corneille wrote for the Orange flower and the Everlasting. Julie, on the day of her marriage, found this precious book on her toilet table. The misfortunes of the French Revolution transported this interesting monument of the gallantry of the seventeenth century to Hamburgh, where it was put up for sale in the year 1795 ; but the purchaser of this combination of poetry and painting is unknown.



TRIANTHUS FRUCTICULOSUS, OPHRYIS APIFERA, HELIANTHUS ANNUUS, NARCISUS POETICUS.

(Wall Flower.)

(Bee Orchis.)

(Sun Flower.)

(Poet's Narcissus.)

The Wallflower.

THERE are about ten species of this plant well known in the United States; most are, however, exotics. It is in the class Tetrady namia, order Siliquosa, which class has the advantage of forming a perfectly natural as well as artificial order; the generic name was derived by Linnæus from the Arabic *Keiri*, and means a hand-flower. Its characters are: Germ with a glandulous toothlet on each side; calyx closed, with two leaflets gibbous at the base; seeds flat. Specific character: leaves lanceolate, acute, smooth, subserrate; stem shrubby. The CHERIANTHUS CHERI-WALLFLOWER, is a great favorite, as much so perhaps as any of the species. Phillips, from whom we have drawn largely, remarks that, in floral language, the Wallflower stands as the emblem of fidelity in misfortune, because it attaches itself to the desolate, and enlivens the ruins which time and neglect would otherwise have rendered terrible. It hides the savage strokes of feudal times on the castle walls, fills the space of the wanted stone on the mouldering church, and wreathes a garland on the crumbling monument no longer noticed by friendly relatives.

For this obedient zephyrs bear
Their light seeds round yon turret's mould,
And undisturbed by tempests there
They rise in vegetable gold.

LANGHORNE.

It is the flower with which romance writers embellish all their decaying battlements, falling towers and monastic ruins; and it seems as necessary to their stones, as the dark ivy, the screeching owl, and the gliding spectre itself.

Who loves my flower, the sweetest flower
That swells the golden breast of May,
Thrown rudely o'er this ruined tower,
To waste her solitary day ?

Why when the mead, the spicy vale,
The grove, and genial garden call,
Will she her fragrant soul exhale
Unheeded by the lonely wall ?

LANGHORNE.

During the reign of terror in France, the misguided populace

of Paris, not satisfied with the devastation their frenzy occasioned in the capital, fled to St. Denis with an intent to destroy every vestige of the royal monuments, and to scatter in the wind the ashes of their sovereigns which were deposited in the sacred abbey at that place. Some time after, this spot was visited by the poet Trenuil, who found heaps of sculptured fragments, which the madness of the rabble had thrown into an obscure court of the abbey, covered over with fragrant Wallflowers, which gave rise to his verses :

Mais quelle est cette fleur que son instinct pieux
 Sur l'aile du Zéphir amène dans ces lieux ?
 Quoi ! tu quittes le temple où vivent tes racines,
 Sensible Giroflée, amant des ruines,
 Et ton tribut fidèle accompagne nos rois ?
 Ah puisque la terreur a courbée sous ses lois
 Du lis infortune la tige souveraine,
 Que nos jardins en deuil te choisissent pour reine,
 Triomphale sans rivale, et que ta sainte fleur
 Croisse pour le tombeau, le trône et le malheur

TOMBEAUX DE SAINT DENIS.

The common Wallflower is a native of the South of Europe, and is found wild in Switzerland, France, and Spain ; and we may presume it was one of the earliest of the English cultivated flowers, from its being so constantly found on the ruins of their oldest buildings. It is in the natural order Cruciformes, because the flowers have only four petals, in the form of a cross. The silique is a pod, consisting of two valves and generally one dissepiment extending its whole length ; and the seeds are fixed on both sutures, differing from the legume, where the seeds are fixed on one and the same suture, but alternately between the two valves. The Wallflowers which grow out of the crevices of old buildings are of a much hardier nature than those of the garden, for as they can receive but little moisture by the fibres of their roots, their stem becomes firm and woody, and able to bear the frost without injury ; whereas those cultivated in the garden become succulent, and consequently more susceptible of cold. The two principal varieties of the Wallflowers are the yellow, and the red or bloody. These, by the intermixture of impregnation, have created numerous trivial varieties, as the yellow striped with a reddish brown, or the red striped with yellow.

Thompson, whose pen was not able to describe so sweet a flower by so terrible a name as that of bloody wall, distinguishes it as

The yellow Wallflower, stained with iron brown,
And lavish Stock that scents the garden round.

We have frequently sown the seeds of the rich iron-brown colored Wallflowers on old walls, and they have uniformly degenerated into a plain yellow. We therefore consider this to have been the natural color, and the dark lines first caused by the impregnation of its relative the scarlet stock. It has been cultivated in the double state for upwards of two hundred years. The *CHE-RIANTHUS FRUCTICLUOSUS*—WILD WALLFLOWER, is an ornamental evergreen shrub, common to old walls in Britain, and bearing a yellow flower from June to July. Leaves lanceolate, entire; hairs two parted, appressed or none; pods linear; stigma with recurved lobes. Some English writers say that this flower blossoms in April and May, and add that it is no doubt owing to the artificial combination of various materials that afford nutriment to the seeds of many vegetables, which are thence stimulated and come into being, and thus grow on and around ruined fortifications and castles, among whose relics the botanist finds frequent objects of interest; the Campanula nods on the battlements, and the Wallflower gives her odors to the breeze, as it sighs around the lonely pile which had once echoed only to the voice of cheerfulness and revelry.

A most beautiful variety of this plant has been lately introduced from Russia to England, by Mr. Lambert, which has been named the Chameleon Wallflower, as its petals at first are of a bright yellow, but gradually become paler until they are nearly blanched white; after which they change to a purple tint, so that the top flowers are yellow, those in the middle white, and the lower blossoms of a lilac or purple hue. This variety is perfectly hardy, but not permanent, as in some instances it has changed to a copper color, and in others to a plain yellow or white. It appears to us a mixture of the yellow Wallflower with the white and purple stock. We possess but few flowers that ornament the garden so gaily and so sweetly as the Wallflower. When planted in clumps of six and ten plants each, the effect is both gay and agreeable. By cutting off the branches of seed-pods, they will blossom a second time, and they have often been kept for

several years by this means, which also ensures flowers early in the spring. The yellow Wallflower is the most conspicuously gay in the shrubbery, but the dark iron-brown is the most esteemed on the border of the florist. It frequently happens that some plants when growing upon rich soil produce flowers with five petals; it is the seed of these that should be principally saved, as they frequently produce double flowers. April is the season recommended to sow the seeds of the Wallflower, which are soon of sufficient size to transplant out either in a nursery bed or on the spots they are intended to embellish. They should always be planted sufficiently early in the autumn to obtain a good rooting before the frost approaches, and the drier and poorer the ground, the better will these plants endure it; but when planted in a rich compost of vegetable mould, manure, and loam, and well mixed, they arrive at an unrivalled degree of perfection, particularly when potted in the spring and kept in a north-east aspect, where they receive only about three hours sun each day. These should be housed during the winter, giving them but little water until they begin to show flower-buds, when they may be more freely watered, and if they prove of good kinds they will be found to repay the attention by the beauty and size of their flowers. The perfectly double varieties being destitute of the organs of fructification, produce no seed, but may be propagated by slips planted in the spring, which readily take root if kept moist; but these seldom make such fine plants or produce so large petals as those raised from the seeds of semi-double flowers. This plant was formerly prized in scorbutic affections; but as many others much better than itself have supplied its place, it is now only valuable for its beauty and sweet odor.

"Wearest thou to-day the wreath of fame,
 Oh heed it not, Oh heed it not!
A few brief years thy place and name
 May be alike forgot,
And but a lowly flow'ret wave
 Upon thy unremembered grave."

"Here ends the semblance—never more
 This ruined pile shall rise;
But man, a seraph blest shall soar,
 When what is mortal dies,
If while earth's changing paths he trod,
 His heart and hopes were fixed on God."

The Sunflower.

THIS magnificent genus of plants is entirely American. It belongs to the class Syngenesia, order Polygamia Frustranea. Its generic characters are :—calyx imbricate, ragged, leafy ; receptacle flat, chaffy ; egret two-leaved, somewhat chaffy, caducous. There are a great number of species. The *HELIANTHUS DIVARICATUS*—SMALL SUNFLOWER, is a showy plant, often found in woods, and flowering in August and September. It has a smooth, round, straight stem, covered with a sea-green mealy powder. The leaves are rough, slightly cut at the margin, tapering to a long point from a roundish base, three-nerved, and placed opposite each other. The cultivated plant, from its spicy and pleasant perfume, and numerous florets, would hardly serve as a model for its forest brother, which has both in a much less degree. The branches of the panicle are either two or three-parted. It rises to the height of from five to seven feet.

The *HELIANTHUS DECAPETALUS*—TEN-RAYED SUNFLOWER, has its upper leaves alternate ; it bears a showy yellow flower in August, and rises four feet high.

The *HELIANTHUS FRONDOSUS*—REBEL SUNFLOWER, a variety of the former, common in Canada, has below a smooth stem, which is rough below, higher up it is straight ; rises about five feet in height, rather short peduncles, which bear a small flower with eight rays, from August to September.

In the United States the Sunflower is cultivated on a large scale for the purpose of preparing oil from the seeds, which is good tasted, and fit for salads and any other purposes for which olive oil is used. The whole plant, and particularly the flower, exudes a thin, pellucid, odorous resin, resembling Venice turpentine.

Phillips tells us that this Peruvian plant has been named *He-lianthus*, from two Greek words, meaning the sun and a flower, because its magnificent corolla bears a resemblance to the great luminary of day ; and on this account it was used in the religious ceremonies of the ancient Peruvians, who worshipped the god of day—the virgins who officiated in the temple of the Sun being crowned with the *Helianthus* made of pure gold, and

wearing them also on the breast, and carrying others in their hands, which, reflecting the rays of their deity by the brilliancy of the metal, formed an effect of the most imposing grandeur. The Spaniards, who were amazed at this display of gold, were still more astonished when, in May, they saw the fields covered with these flowers, which had been so closely imitated by the artificers of the new world, that the precious ore appeared less admirable than the workmanship in the eyes of those rapacious conquerors. The Sunflower is made the emblem of FALSE RICHES, because gold of itself, however abundant, cannot render a person truly rich. It is related of Pytheus of Lydia, that possessing valuable gold mines, he entirely neglected the cultivation of his lands, which naturally became so unprofitable as not to afford the common necessities of life. His wife, who showed herself possessed of as much good sense as wit, at a banquet supper which Pytheus had ordered to be prepared, directed that all the dishes should be filled with gold, in different shapes and states, instead of viands. On the removal of the covers, this ingenious woman exclaimed to the guests, "I set before you what we have in greatest abundance, for we cannot reap what we do not sow." This lesson made a proper impression on the mind of Pytheus, who acknowledged that Providence distributes its various riches like a tender mother, who has love for all her offspring, however numerous. This gaudy flower naturally brings to mind the enormities which the treacherous Spaniards committed on the plains, where this plant springs spontaneously, led on by the most ravenous appetite for plunder; the infatuated pillagers attempted to enlighten the unfortunate heathen, who, in the simplicity of their hearts, poured out their adorations to the sun, as the grandest object which their imaginations could conceive, and their glaring and favorite flower will ever remain as a memento of the folly of those, who attempt to inspire the ignorant with an idea of pure religion, through the assistance of craft and cruelty. Had the Spaniards returned to Europe loaded with plants and seeds, which would have been an excitement to industry, instead of gold and precious stones, which naturally lead kingdoms, as well as individuals, to voluptuous idleness, the Spanish nation might, at this period, have been one of the most wealthy and happy kingdoms in Europe, instead of being impoverished by pride, and depopulated by dissensions. The

first mention we have of the annual Sunflower in England, is by Gerard, who notices it in the year 1596, under the name of the Flower of the Sun or the Marigold of Peru. He tells us that it had grown to the height of fourteen feet in his garden at Holborn, producing flowers that measured sixteen inches over, and adds, that in Spain, it has been known to reach the height of twenty-four feet. The French call this flower Soleil and Tourne-sol, from a vulgar error that the blossoms turn to the sun; whereas the flowers branch out on all sides of the plant, and those which face the east at the opening of the day, never turn to the west at the close of it. They have been seen pointing towards every bearing of the compass on the same plant. It is unfit for the small parterre, but when planted among shrubs or young trees, or on the borders of woods, its imitative suns shine to advantage. It is a flower we would recommend to young students in botany, since its great size will enable them to understand the class and order in which it is placed, better than any other plants of the same class. Linnæus adopted the term *Syngenesia*, a generating together, for this class, which, as it includes all the compound flowers, from the modest daisy to the gay dahlia, forms one of the most interesting classes. It contains a natural order of plants, perfectly distinct from any others which the vegetable creation presents to our view; consequently their arrangement in the artificial system of the illustrious Swede is peculiar to themselves. It could not be defined by the number of stamens and pistils, since all the numerous genera contain the same, which made it necessary to find other characters in the flowers, so as to form the basis of subdivision. For this purpose Linnæus adopted the polygamy or intermixture of sexes in the florets. The characters of the class *Syngenesia*, being of a decidedly different nature from other flowers, may be easily known. It consists, first, in the congeration of the anthers, which is uniform throughout all its numerous genera; and secondly, that more than one floret is always contained in each calyx; this is sufficient to determine any plant belonging to the class *Syngenesia*. The Sunflower, more particularly the single one, presents you with a clear idea of the class and order to which it belongs, since you see the parts on a large scale. The common receptacle supporting all the numerous florets on its surface, each of these florets is in fact a separate monopetalous flower, having within

itself the parts necessary for the formation of the seed. These numerous florets are surrounded by a ray of petals, whose office is to protect the whole interior assemblage of flowers, as the houses of a city are surrounded by a wall. This flower is placed in the third order or division of the class Syngenesia, and which order is named Polygamia Frustranea, because the florets of the margin next the petals are neuter, that is, containing neither stigma nor anthers—which is expressed by the term frustrated, from *frustra*, to no purpose. The florets of the disk or centre of the flower are bisexual, containing a pistil, headed by a divided stigma, termed bipartite, which is surrounded by five anthers. Each of these florets is succeeded by a seed, and so numerous are the florets in a large single Sunflower, that Barchin tells us he has known them to contain 2362 seeds in one flower. The more double this flower becomes, the less seed it produces; as it becomes double by the change of the tubular into ligular florets, like the petals in the ray, only smaller. The seeds of the Sunflower, when peeled, have a taste similar to sweet almonds, and from their oily nature they are an excellent food for fattening domestic poultry; but it is with difficulty they can be protected from the ravages of small birds, many of whom eat them with the greatest avidity, leaving the receptacle like an empty honeycomb. For ornamental purposes, the seed should be saved from the largest and most double flowers, which will be found on the top of the principal stem, those on the side branches being smaller, and frequently having abortive seeds. When the seeds are ripe, the heads should be cut off with a part of the stem, and hung up in a dry, airy place for a few weeks, when they may be rubbed out and put in bags or boxes until the time of sowing, which is during the month of March. The seed should be sown on a bed of common earth, and when the plants are about six inches high they may be removed with a ball of earth to their roots and planted where they are to flower; but we prefer setting the seeds where they are to remain, as the plants are generally finer than those to be removed.

The *HELIANTHUS MULTIFLORUS*—*PERENNIAL SUNFLOWER*, is a native plant of Virginia; it was early introduced into various countries. It is easily increased by parting the roots, will stand a smoky atmosphere, and continues giving forth flowers all summer.

The last species of much importance to mention, is the *HELI-*

ANTHUS TUBEROSA—JERUSALEM ARTICHOKE, a plant that was formerly much cultivated for the sake of its tubers, which were formerly relished; the supposition, however, having obtained credence that these were very unhealthy, tending to produce flatulency and dyspepsia, has almost sunk them in oblivion. It should be understood that this is not the true Artichoke, which is the fleshy receptacle of the **CYNARA SCOLYMUS**, and still preserves its esculent reputation. Mr. Noble says:—The Artichoke is but very little known as a farm crop as yet, and its properties and uses are not understood or appreciated as they should be. This root possesses a strong propensity to grow. It seems to thrive on almost every kind of soil, and is less affected by the seasons than any other crop with which I am acquainted, though the better the soil, and the more favorable the season, the greater will be the product of this as well as other crops. Of its ability to stand late frosts and severe drought, I had the fullest proof the past season. While all other crops in this section of the country were nearly destroyed by these influences, my field of Artichokes stood out in bold relief, as if in defiance of the worst weather that could blow, grew on and produced a splendid crop. As a root crop it possesses decided advantages over all others, in being more certain, and costing less in its production; while in the point of value in nutriment I believe it is not inferior to any. (The opinions of some learned men to the contrary notwithstanding.)

In addition to the value of the roots, the tops, when cut in season and rightly cured, furnish a large amount of fodder (say from three to five tons per acre), which is much relished by sheep, horses, and cattle; and to these advantages, it does not require planting after the first season, and the crop may be left in the ground all winter, without any danger of injury from freezing; on the contrary, the roots are benefited by the frosts of winter.

I have fed these roots to all kinds of stock, and they all seem to relish them much. The two last seasons I have fed them to my whole flock of sheep, and the effect evidently was to increase the growth of wool, and cause the ewes to yield an abundance of milk, as shown by the large fleeces, and the fine, thrifty, and vigorous lambs. Previous to using Artichokes, I fed potatoes in the same manner, but I give the former a decided preference.

I have tried several modes of cultivating the Artichoke. The plan I would recommend is, to put the ground in good order, as for potatoes or corn; then with a plow open furrows four inches deep and three feet apart, as straight as possible, so that a plow or cultivator can work between, close to the rows. Then drop the sets ten inches apart in the furrows—if large sets are used, they can be cut into pieces of three or four eyes each, like potatoes—then cover with a plow, and smooth with a light harrow.

The after culture to consist of a thorough harrowing about the time the first plants make their appearance, followed by two or three dressings with a cultivator, at suitable intervals during the early part of summer—nothing more is necessary to insure a good crop.

I generally leave the crop in the ground till the frost is out in the spring. I then plow the ground and gather all the roots that can be found, then plow again and gather again. When all are gathered that can be found in this way, there will be enough roots left to fill the ground with plants for a new crop. When the young plants appear above ground, all that is necessary to be done, is to go through with a cultivator, and cut them up in such a manner as to leave rows as when first planted. By repeating this cultivation two or three times, the work will be done for a second crop.

It is advisable to plant Artichokes where they can remain quite a number of years, as it is difficult to eradicate the roots from the ground; and besides, the trouble and expense of re-planting is thereby avoided.

It will, of course, be necessary to manure the ground occasionally, unless it is uncommonly rich. This can easily be done immediately after gathering the crop in the spring.

The classical origin of the Sunflower is given as follows:— Clytie, daughter of Oceanus, was very jealous of Apollo, and deeply affected by his inconstancy, she brooded so long on her misfortune, as gradually to pine away and die. At a solemn conclave held at Olympus, she was changed into a Sunflower, and bearing his likeness, still turns to her beloved as he daily pursues his course, giving thus a perpetual token of her unchanging and devoted affection. Moore says:

The Sunflower turns to her god when he sets,
The same look which she turned when he rose.

Uplift, proud Sunflower, to thy favorite orb,
That disk, whereon his brightness seems to dwell,
And as thou seem'st his radiance to absorb,
Proclaim thyself the garden's sentinel.

BERNARD BARTON.

And when along the rising sky,
Her god in brighter glory turned,
Still there her fond observant eye,
And there her golden breast she turned.

When calling from their weary height,
On western waves his beams to rest,
Still there she sought the parting sight,
And there she turned her golden breast.

But soon as night's invidious shades,
Afar his lovely looks had borne,
With folded leaves and drooping head,
Full sore she grieved as one forlorn.

Such duty in a flower displayed,
The kind observers smiled to see,
Forgave the pagan rites it paid,
And loved its fond idolatry.

In the Encyclopedia of Plants, the editor follows the above poetical notion, but its falsity is so fully known, and as we have spoken of the error before, we may leave the subject. Our plate represents one of the largest and most brilliant of the Sun-flower species, perfectly similar to the one Gerard has described in the preceding pages.

The Orchis Tribe.

THE class Gynandria, to which this tribe belongs, is perhaps the most curious of all the curious classes Linnæus presents to us; the ostensible character from which the name is derived, is the insertion of the stamens upon the pistil; but these organs are so different generally, in both shape and color, from those we commonly see, that with a few exceptions their total absence would be imagined by one unacquainted with these facts.

Modern arrangement has divided the family we are about considering into upwards of 300 different genera, some of which are named, *ORCHIS*, *SATYRIUM*, *OPHRYS*, *HABENARIA*, *GYMNA-DENIA*, *HERMIRUM*, *ACERAS*, *GOODYEARA*, *BARTHOLINA*, *SERAPIAS*, *DISA*, *PTERYGODIUM*, *NEOTTIA*, *PONTHICOA*, *DIURIS*, *THELYMITRA*, *LISTERA*, *EPIPACTIS*, *POGONIA*, *CALADENIA*, *GLOSSODIA*, *PTERO-STYLIS*, *CALCYA*, *CALOPOGON*, *ARETHUSA*, *BLETIA*, *GEODORUM*, *CALYPSO*, *MALAXIS*, *ISOCHILUS*, *CORALLARRHIZA*, *STELIS*, *ORNITHEDIUM*, *CRYPTARRHENA*, *AERIDES*, *SIMODORUM*, *PLEUROTHALLIS*, *OCTOMAERIA*. Most of these species are of perennial duration and grow in moist and shady places, where vegetable earth abounds; some of them, more especially in tropical climates, as the tribe of *EPIDENDRONS*, exist only as parasites, and are attached to the bark of trees by their fleshy fibred roots. Many of them have tuberous roots, which gradually change to the character of thick and branching fibres, all of which are annually and laterally renewed; and Nuttall remarks, so that in many of the tubers, as those of the *Aplectrum* and *Epidendrum*, the annually rejected inert and withering tubers form concatenated links of several individuals, possessing different degrees of vitality and powers of reproduction. Most of them, with the exception of the fibrous and clasping roots which we have mentioned, are of difficult propagation, though we can promise some little success in their cultivation; nor will many of them exist at all, except in the shade of the forest and amidst recent vegetable soil. Invariably entire leaves of an oblong shape, embracing at the base a simple stem, are their characteristics, with the flowers arranged in spikes or racemes. The majority of them are in the order *Monandria*, and a few in *Diandria*. They are well distributed into sections, by three different forms of the anther, the texture of the pollen being used by Mr. Brown for further distinction. To describe minutely all these genera would require volumes; in our compass it would be difficult to explain thoroughly one of them; we will consequently give all we can—a bird's-eye view. Phillips remarks, that this family of plants, so singular in their construction and so beautiful in their appearance, should so often be excluded from the parterre, evinces a want of taste in floriculture, or a strong predilection for ancient prejudices and absurd opinions. Even the poets have failed to celebrate this flower, which so richly enamels our vernal pastures with its spiral blos-

soms, and so sweetly contrasts its purple spikes with the yellow furze of the English hills. The Greeks named it *Orchis* from the form of the roots in many of the species ; and this appellation is now general in most European languages. In addition to the Greek name the Latins often called it *Satyrion*, because the early Romans believed it to be the food of the satyrs, and that it excited them to those excesses to which fabulous history so much addicts them. In mythology the *Satyri* are represented as demi-gods, who chiefly attended upon *Bacchus* ; but Pliny speaks of them from report as animals which inhabited a part of India. It is related by Pausanias, Plutarch, and other ancient historians, that a satyr was brought to Sylla, as that general returned from Thessaly. The monster was taken alive, and is stated to have answered in every degree the descriptions given of the satyrs by the painters and poets. Sylla was so disgusted with the sight of the monster, that he ordered it to be instantly removed. The *Orchis* root being represented as the favorite diet of the imaginary satyrs, it naturally became celebrated as one of the most stimulating medicines known ; and it is so described by all medical writers on simples, from *Dioscorides* down to the present day ; but most of these accounts are too ridiculous and indelicate to transcribe, and we trust they will be so far disregarded as not to shut this beautiful plant out of the gardens of this enlightened age ; nor would we debar the medical man from ascertaining the real quality of these bulbs, the juice of which is so strongly recommended as a cooling application to inflamed surfaces, and a resolutive to accelerate the suppuration of indolent tumors, to say nothing of its powers in the electuary *diasatyrion*. It is told us that the *Orchis* owes its origin to the lascivious son of the satyr *Patellanus* and the nymph *Acolasia*, who presided at the feasts celebrated in honor of *Priapus*. The youth being present at the celebration of the feast of *Bacchus*, injured one of the priestesses of that god, which so incensed the bacchanalians against him that they tore him in pieces ; and all the remedy which his father could obtain from the gods was, that his mangled corpse should be transformed into a flower, which should retain his name of *Orchis* as a blot upon his memory. [For a true version of this distorted narrative see 1 Samuel ii. 22.] The Persians and Turks call the roots of the *Orchis Salop* ; and it is with these bulbs, as well as the palmated roots of other species

of *Orchis*, that they prepare their favorite drink of salop, which is made palatable by the addition of milk and ginger. This beverage is drunk hot. The florists have not proved more negligent in cultivating these curious plants than the botanists have been anxious to collect the different species of them from all quarters of the known world, and from their exertions we now possess eighty distinct species, besides numerous varieties of several of the kinds.

We cannot pass over the natural tribes without recommending them to the notice of all true admirers of flowers. The idea that they will not bear cultivation is as foolish as the old story of their springing from the blackbird and thrush. Several species have been transplanted with success, and the early varieties never fail to draw attention by the beauty of their spotted foliage and the riches of their purple and lilac colors. The plants are generally collected as soon as they have appeared above the ground, taking them up with as much earth as possible about their roots, and planting them in the garden in a similar soil to that from which they were taken, and where they have often remained for several years without the ground being disturbed, and been found stronger than in their natural situations. Phillips, in the year 1812, planted many of these bulbs under some trees, on a small bank in a garden, and in 1816 several young plants were found growing in a turf plot adjoining, which must evidently have sprung from the seeds of those planted on the bank; they were of the *moris*, *mascula* and *ustulata* kinds. It would be more desirable to collect the bulbs in the summer, which might be easily done by placing a small stick in the earth, on the north side of the plant when in flower, and to take them up in July and October, before the foliage be entirely decayed. The *Ophrys* are far less common than the *Orchis*, but these are most frequently found in chalky soils, that are kept moist by the partial shade of coppice wood. It germinates by seed. That it does not increase by a viviparous nature, like many other bulbs, seems pretty certain, by our not finding any of these plants growing in clusters like the crocus, snowdrop, tulip, or hyacinth. Like the meadow *Orchis*, it has two distinct bulbs, united at the top, one of which only sends up a stem: and during the season that this bulb is nourishing the flowers and seeds, it becomes shrunk and shrivelled, but the dormant bulb swells and increases in

strength, and sends up a flowering stalk the following year, leaving its companion bulb to rest and recruit in its turn. When these bulbs are divided the plant is sure to perish, as has been experienced by taking off the dormant bulb and planting the flowering one in a small pot, where it continued to flourish and produce blossoms; but on examining the earth in the autumn, there was no part of the bulb remaining, whilst those that had been planted with the two bulbs were found as already described—the one in a shrivelled state, from which the stem was decayed, and the other become full and pushing out its stem. The name of Ophrys, which is given to these plants, is derived from the Greek, eyebrow, one species having anciently been used either to blacken the eyebrows or to make them grow. The **OPHRY'S MUSCIFERA**—FLY OPHRYS, is so named from its great resemblance to a fly, and on this account it is made to represent ERROR or MISTAKE in floral language. It is generally in flower from the end of May to the beginning of July; it has a slender stem, from twelve to eighteen inches in height, and is rarely seen with more than three leaves, which sheathe the stem at the base, which are of a pale green color and lanceolate-shape. The flowers expand in succession, beginning at the bottom, and it is not common to see more than three or four expanded at the same time; as the lower ones decay, others open higher up, at the spike, until the whole have blossomed. A spike seldom contains more than fifteen flowers, and seldom less than four or five. They are thinly scattered on the stem, which adds considerably to the deception, for were they numerous it would lessen the effect. The calyx divides with three lanceolate leaves of pale green, out of which issues a corolla or petal, so bent, cut, or painted, as to resemble a fly with its head in the calyx. The velvet-like pubescence of the corolla, and the blue mark dividing the chocolate-color, contribute much to the resemblance of this vegetable substance to an animal body.

The **OPHRY'S APIFERA**—BEE OPHRYS, the one represented in our plate, flowers about a month later than the Fly Ophrys, and the flowering spike is thicker and shorter than the other, being generally from six to ten inches in height. The flowers are considerably broader and closer set, and in shape and color resemble a small humble-bee. The spike seldom produces more than four or six flowers, but, like the other, continues a considerable

time in blossom before it withers, unless too much exposed to the sun and winds. The leaves are of an ovate lanceolate-shape, silvery underneath, and larger than those of the Fly Ophrys. It was included among the INSECTIFERA of Linnaeus, and is a native of several parts of Europe, and loves a somewhat chalky and meadow soil. It is of course the emblem of INDUSTRY. As the seed ripens in August, it would be worth the experiment of those who have room and a suitable soil, to scatter it on the ground in favorable situations, similar to that in which it grows naturally; but as most bulbous roots raised from seed, require some years before they have strength to send up flower-stalks, these must not be expected for at least three or four years. We should recommend, at the same time, that a portion of the seed should be sown in a bed of earth congenial to the nature of the plant, and very slightly covered with vegetable mould, as we observe the plants to be generally most abundant amongst decayed leaves. We should also recommend the bed to be kept covered with moss, which would keep the earth moist and protect it from frost, which should be kept down by laying slender twigs over it, and pegging them down with little forked branches.

The CYPRIPEDIUM, or LADIES' SLIPPER, is another member of this wonderful family; its large, puffed up, bladder-like lip gives it the name. Many of its species have four petals, the under one bifid. In rich woods, where there is plenty of shade, these are commonly certain to be present, and may easily be found when in flower, which is from May to June. Nuttall says, they have copiously fibrous roots, and, with the exception of the C. Nudicaule, leafy, simple stems, more or less pubescent; the leaves are very broad, nicely plaited, and spring directly from the stem; the flowers, of which there are from one to three on a stem, are part white, but mostly yellow or red predominates. In Europe, there is but one species. In India there are several very strange species, the most of which have evergreen leaves. Six species, yielding in nothing, in respect to either beauty or size, to any found elsewhere, belong to our country.

The Narcissus.

THIS beautiful genus of flowers is a great favorite in the United States. As the species are almost entirely cultivated for the show, we meet with it generally in the double form, where it is, as usual with flowers in such cases, completely transformed. We find the stamens changed in their growth and turned to petals, and the pistillium metamorphosed into the infertile rudiments of one or more additional flowers. They are in the class Hexandria, order Monogynia. The generic characters are:—corol bell-form, spreading, six-parted, equal and superior; the nectary one-leaved and bell-form, enclosing the stamens. Phillips remarks, that this beautiful family of flowering bulbs, so celebrated by the ancient poets, have many names, and following him, we shall commence with the species distinguished by the name of DAFFODIL—PSEUDO NARCISSUS, which was one of the flowers the daughter of Ceres was gathering when she was seized by Pluto. It was evidently considered by the earlier English writers as a kind of lily, and we are of opinion that the name is a corruption of Dis's lily, as it is supposed to be the flower dropped from the chariot of that god in his flight with Proserpine. Gerard calls them Daffadowndillies; and they are known as chalice flowers, from the shape of their nectary, and Lent lilies, from the time of their flowering. That which bears the earliest, is the N. MINOR—SPANISH DAFFODIL, which is noted for its resistance of cold, and its rapid propagation by roots, though the flowers are of diminutive size, yet they make a pleasing variety with the snowdrop and other early flowering plants, and give a gaiety to the walks of the shrubbery, when planted in large clusters. The common Daffodil is a native of England, where it blossoms in March, but with us, more commonly in May, and is useful for the embellishment of wet pasture, the banks of orchards, the borders of woods and cottage gardens. They should be planted with a liberal hand, amongst the evergreens that are seen from the principal walks and windows of the house, avoiding as much as possible the appearance of the gardening art, by clumps set at distances. They should be scattered, as it were, by nature's hand, sometimes half obscured by

shrubs, and at others springing out of the green turf, beneath the spreading branches of some sable-clad tree ; for beauties but half discovered are the most coveted, as the charms of the moon's beams are increased by passing clouds. The single Daffodils require no further attention than to observe the spot where they grow, so as not to cut their roots by the hoe or spade ; but the double varieties should be taken out of the ground with other curious bulbs ; for by remaining in the earth they will return to their single natural state, which the florist improperly terms degenerating. These bulbs should be replanted about the end of October, observing to open a space of ground the size intended for the clump, and then cover them with earth. It is said that its flowers often fail, and an amusing story is told of this being cultivated with great care in Holland, and returned to England under the name of Phœnix or Soleil d' Or ; after tending the forced plant with much care, they were surprised they possessed in it nothing better than the false Narcissus.

NARCISSUS POETICUS—POET'S NARCISSUS, is an ornamental bulbous plant, having a perennial root ; segments reflexed and imbricate at base ; cup expanded, flat, their anthers shorter than the tube ; leaves erect, narrow. This favorite flower has been made the emblem of EGOTISM and SELF-LOVE, from the well known story of the boy Narcissus, who was changed into this plant for slighting the fair Echo in favor of his own shadow.

Narcissus on the glassy verdure lies,
But whilst within the crystal fount he tries
To quench his heat, he feels new heats arise,
For as his own bright image he surveyed,
He fell in love with the fantastic shade ;
And o'er the fair resemblance hung unmoved,
Nor knew, fond youth, it was himself he loved.
She saw him in his present misery,
Whom spite of all her wrongs she grieved to see ;
She answered sadly to the lover's moan,
Sighed back his sighs, and groaned to every groan.
Ah youth ! beloved in vain, Narcissus cries,
Ah youth, beloved in vain, the Nymph replies.
Farewell, says he, the parting sound scarce fell
From his faint lips, but she replied, farewell.
Then on the wholesome earth he gasping lies,
Till death shuts up those self-admiring eyes,

To the cold shades his flitting ghost retires,
And in the Stygian wave itself admires,
For him the Naiads and the Dryads mourn,
Whom the sad Echo answers in her turn ;
And now the sister nymphs prepare his urn,
When looking for his corpse, they only found
A rising stalk with yellow blossoms crowned. ADDISON'S OVID.

On this account the flower retains the name of Narcissus in all the enlightened nations of Europe, though some etymologist derived the word from the Greek, *narke*, signifying stupor, from its narcotic quality. The Poet's Narcissus produces but one flower on a stalk, which inclines to one side, and takes a horizontal position. The corolla is of a pure white, and expands quite flat, the petals being rounded at the joints; the cup or nectary in the centre is very short, and fringed on the border with a bright purple circle; sometimes this flower is found with a crimson edge to the nectary, and we occasionally meet them with two flowers issuing from one spathe. They flower in England, from the middle of April to the end of May; somewhat later, of course, with ourselves, and have a very agreeable and sweet perfume. The double white Narcissus, a variety of the poet's flower, is generally esteemed, either in the garden or when planted in pots for the house, and but few flowers are better cultivated to fill the vase of the saloon or ornament the epergne for the dinner table. The Polyanthus Narcissus is so called, on account of its producing many flowers on one stalk. The generic name of this species, *Tazetta*, is from the Italian, and signifies a little cup, given on account of the smallness of its nectary. It is a native of the East, and some say also of the southern parts of Europe. The Chinese call it the SHUEY SEEN FOR, and it is used by them for religious purposes at the New Year. These bulbs are sent every year from Chinchew, being only kept in Canton during the time of their flowering. They are planted in pots, made to retain water, filled with sand or small stones. It is a valuable flowering bulb, both on account of the early season at which it blossoms, and the numerous flowers it gives out from one stalk, as well as for its agreeable odor; on this account the florists in Europe have taken great pains in improving it by cultivation, and raising numerous varieties of it from seed. The bulbs should be planted in October, in good fresh earth, of rather a light loamy nature, with a small portion of sand well mixed with

it. The bulbs that are planted in pots should receive but moderate watering, so as to keep up a slight moisture; but at the time of their flowering a more plentiful supply of water will greatly assist them. From the end of October to the middle of November is the proper time to place these bulbs in the glasses to flower with hyacinths, and for this purpose the variety called the Cyprus Narcissus is the most desirable. It should be observed not to place the same bulbs in water two successive years. After they have flowered, and the leaves are quite decayed, they should be laid in a shady situation to dry, but not where they may receive a draught of air; in this state they may be preserved until the season for planting them in the natural ground or in pots of earth.

The NARCISSUS JONQUILLA—JONQUIL. This has also a perennial bulbous root. The spathe is one or three-flowered; segments reflexed, spatulate; cup much shorter than segments, saucer-shaped, spreading, crenate. This, in floral language, is made the emblem of DESIRE, and is distinguished from other species of Narcissus by its rush-like foliage, and hence the name derived from *juncus*, a rush. It is the most fragrant of all the species of Narcissus, generally too much so for some rooms. It flowers well in water, and forms a good figure in the grass with other Narcissuses, as its color is of the brightest yellow. When planted in the open ground, it prospers best in a south-east aspect, and it flowers stronger if an oystershell or tile be put beneath the bulb to prevent the roots running too deep into the earth. The bulbs of a single Jonquil may remain undisturbed in the earth a number of years, but the double variety should be taken out of the ground when the leaves are quite decayed, as it will otherwise return to its natural single state, to the disappointment of the admirers of double-petalled flowers. When planted in the open garden, the Jonquil should be placed in clumps of considerable size, as it then makes an agreeable figure, both by its rushy foliage and its fine yellow flowers, and its roots are less liable to get cut up or injured than when scattered three or four in a bunch in various parts of the border. They should be sheltered from the southwest wind by evergreen shrubs, which will also be found to lengthen the duration of the flowers and improve their appearance, contrasting to advantage with the dark foliage.



HUMULUS LUPULUS.

(Hops.)

Engraved by J. C. Stodder.

The Hop.

THE HUMULUS LUPULUS—*Hop*, belongs in the class Diœcia, order Pentandria. The generic name is derived from the Latin *humus*, moist or fresh earth, which is the soil it loves. Its characters are : Male—calyx five-leaved ; corolla, none. Female—calyx one-leaved, spreading obliquely, entire ; corolla none ; styles two ; seed one, within a leafed calyx. Pliny considers its specific name given on account of its growing among the willows, and was as destructive, by winding around and choking them up, as the wolf (*lupus*) to the flock. It belongs to the Nettle family —Urticaceæ. It is a native of most countries in Europe, as well as of the United States, proving that whatever is really valuable to man is found universally diffused and ready to his hand for use. From its great value it is more frequently seen in the cultivated state, than when growing wild. It is not only very useful but very ornamental. The root is perennial. The stems, which are annual, are long and climbing, turning from right to left, quite rough, and covered with small prickles, which are bent backwards. The leaves are placed opposite each other on long winding footstalks ; the smaller ones are somewhat heart-shaped, the larger more deeply lobed, generally cut into three or five parts, toothed on the margin, veined, and noted for their extreme roughness. The flowering branches are axillary, or come out from the angle between the leaf and stem ; they are rough and angular. The appendages at the base, between the petioles, are of a reversed egg-shape, generally numbering from two to four. The flowers are of a greenish yellow color, and exceedingly numerous, and present a very, we can use no other term, genteel appearance ; on which account, GENTILITY, instead of its old emblem INJUSTICE, has been proposed as a substitute in floral language. It has no corolla ; the anthers are oblong, supported on short filaments, and have two terminal pores which burst to eject the pollen. The calyx of the barren plant has five spreading concave leaves, somewhat oblong in shape ; those of the fertile flowers are in the form of a catkin. The germ is compressed, somewhat round, supported by two short styles which have long, narrow, sharp-pointed, and hairy stigmas. The calyx,

scales, and corolla swell into a permanent strobile, which bears roundish seeds. These, when full grown, are the part sold in commerce under the name of Hops, which name is derived from the Anglo-Saxon hoppan, which signifies to climb, given on account of the habits of the plant. The flowers make their appearance in August.

Dr. Ives of this city instituted a very interesting and valuable series of experiments relative to the properties of this plant. He found that there was a characteristic taste belonging to leaves, stem, and all parts of the plant; and besides this, in the woody scaled catkin, an aromatic heavy odor, and strong bitter taste, which upon examination was found to proceed from a semi-resinous substance in the form of small yellow globules formed on the outside of the scales of the calyx and corolla, and about the base. In this substance, as Dr. Smith observes, appears to reside the whole bitterness and fragrance for which it is so universally prized. It is separated by rubbing and sifting, when it appears like a fine yellow powder; if the fingers are warm, it will, from its resinous nature, adhere to them, and also burn freely. It is called lupuline.

The hop has for a long time been used in the manufacture of beer, and is annually brought into our city in immense quantities. It communicates an agreeable flavor, and brewers consider it has also a preservative quality in preventing the rising or fermentation. As the Hop is very light and considerable is used, an enormous loss takes place from its absorption, as one barrel of wort is absorbed by every sixty pounds used in brewing. Were it in our power to introduce a substance that would prove twenty times more troublesome and costly in the manufacture of beer, we would willingly do so, but we are compelled to state that the introduction of lupuline has of course all the advantageous properties of the Hop, without any of its inconvenience. It has been calculated that one pound of this substance could be obtained from every six pounds of Hops. It is a valuable tonic, and very useful in dyspeptic complaints, either fermented or in tincture and infusion. Hop pillows are sometimes, without doubt, useful as anodynes; and poultices made with them are of universal application. The young shoots of the plant are boiled and eaten as asparagus, and are considered healthy. As the fibres of the vine are tough and flexible, a coarse cloth has been made

of them in Europe; but the most common form is that of bags for storing the hops themselves, for putting them away or carrying them to market. From two to five grains of the lupuline is generally given as a dose, twice a day.

The Mandrake.

THIS is a deciduous herbaceous plant, perennial in its duration, and bearing a white flower in May. Its leaves are white, large, broad, and smooth, like the leaves of the beech tree. It is in the natural order Solanaceæ, and belongs to the class Pentandria, order Monogynia. The name is probably derived from the German *mandragem*, resembling a man. A great many foolish stories are still circulated and believed respecting this renowned plant, and by request we will give its history, which we take from Phillips, an English writer, and whose description is consequently suited to that country: This plant, which has been rendered celebrated by absurdity, is indigenous to classic ground; and on this account, as well as the wonderful tales that have been handed down to us from antiquity, it naturally excites some degree of interest in the inquisitive mind. In symbolical language, the Mandrake is made the emblem of anything rare or extraordinary; and from the earliest ages appears to have excited great veneration among the inhabitants of eastern countries, on account of its supposed extraordinary properties and of its rarity. It is generally believed to be the same plant which the ancient Hebrews called Dudaim. That these people held it in the highest esteem in the days of Jacob, is evident from the notice of its having been found by Reuben, who carried the plant to his mother; and the inducement which tempted Leah to part with it, proves the value they set upon this celebrated plant. As we have no authority for believing the Hebrews used the Mandrake for superstitious purposes, it is most probable that they were acquainted with its anodyne and soporific qualities; and perhaps it was the only opiate known in that age, which alone would render it an invaluable root to persons who could receive no medical assistance except what their own household afforded. It was



MANDRAGORA OFFICINALIS.

(Mandrake)

Engraved by J. C. White & Son.

thought to possess the property of making childless wives become mothers; and hence some suppose Rachel became so desirous to possess the Mandrake that Reuben had found. The Greeks were evidently acquainted with its dangerous properties, as is shown by the names bestowed on it; that of Circium being derived from Circe, a witch celebrated in fable for her knowledge of magic and venomous herbs. The fables, originally intended to instruct and caution the ignorant, were frequently so transformed in the songs of poets as to lose their intention; and they were still more disguised by the crafty, who imposed upon the credulous through some pretended miraculous stories of antiquity. Thus, we are told by old medical impostors, that when the Mandrake was taken from the earth, it gave a dreadful shriek, and struck the daring person with death who had the presumption to dig it from its bed; and therefore it was obtained by fastening the root to the tail of a dog, who thus drew it from the ground, and on whom the penalty descended. The Romans appear to have been very superstitious as to the manner of taking up this root. Pliny tells that those who undertook this office took particular attention to stand where the wind was at their back; and before they began to dig, they made three circles around the plant with the edge of the sword, and then turning to the west, proceeded to take it up. We are disposed to think this ceremony was first observed to prevent the too frequent use of so dangerous a plant among the idolators of the early ages. In later times, when the darkness of ignorance spread its wings over Europe, this plant and its substitutes formed a profitable article with the mountebank doctors of the early ages, when credulity was at a sufficient height to believe that this root was a preventive against mischief and dangers of every kind. With this belief the Germans formed little idols of the roots, to which they gave the name of *abrunes*, which were regularly dressed every day and consulted as oracles; and their repute was such that they were manufactured in great numbers and sold in cases. They appear to have been brought over to England in this state, during the time of Henry the Eighth, and met with ready purchases, it being pretended that they would, with the assistance of some mystic words, be able to increase whatever money was placed near them; and to give greater importance to these pretended miracle workers, it was said that the roots of these plants

were produced from the flesh of criminals which fell from the gibbet, and that they only grew in such situations; others pretended it grew only in one small spot in China, from whence they were procured with the greatest risk and danger. Gerard states, to overcome this prejudice, that both himself and servant had frequently dug up these roots without receiving harm, or hearing any of the shrieks it was pretended these roots sent forth. Madame de Genlis speaks of an author who gave the name of Mandrake to certain sprites that are procured from an egg, which must be hatched in a particular manner, and which comes forth a little monster, half chick and half man, that must be kept in a secret chamber and fed with the seed of spikenard, and that it will then prophesy every day; which grave author also tells his readers that some people of a *weak judgment* and fond of the marvellous, pretend that these Mandrakes pay a tribute of a pistole a day; but this he assures them is not true, and that all they can do is to make their masters lucky at play, discover to them treasures, and foretell what is to happen. In the Hist. Plant. ascript. Boerhave, it is stated that this plant, brought into a chamber or closed room, procures sleep to those that want it. The Mandrake is a species or rather belongs to the family of the deadly nightshade, which grows with a long taper root like the parsnip, frequently running three or four feet deep. These roots are frequently forked, which assisted to enable the old quacks to give it the shape of a monster. This plant does not send up a stalk, but immediately arises from a circle of leaves which at first stand erect; but when grown to their full size, which is about a foot in length and five inches broad, of an ovate lanceolate shape, waved at the edges; these spread open and lie on the ground; they are of a dark green, and give out a foetid scent. About the month of April in England, the flowers come out among the leaves, each on a scape about three inches long; they are of a bell shape, with a long tube and spread into a five-cleft corolla. The color of the flowers of an herbaceous white; but frequently it has a tinge of purple. The flower is succeeded by a globular soft berry, when full grown, as large as a common cherry, but of a yellowish green color when ripe, and full of pulp intermixed with reniform seeds. It grows naturally in Spain, Portugal, Italy and the Levant; it is also indigenous to China, where it enters into the compositions prepared

by the most skilful physicians of that country, and taken by the mandarins with the flattering hope of having their existence prolonged by its powers. It is propagated by sowing the seeds in the autumn, soon after they are ripe, which come up in the spring, but if the seeds are kept until the spring they seldom succeed. The earth should be light and of considerable depth, for the root cannot make its way through chalk or gravel; and when the soil is wet these plants do not prosper, as they are apt to rot during the winter; but in good light earth and in warm situations, the Mandrake root will continue sound longer than the life of man. It should never be removed after it has attained any considerable size; as it is hardly possible to take it up without breaking the lower fibres, which so stints the plant that, although it may live, it seldom recovers its former strength.

Pliny observes, that for medicinal purposes, the plant should be taken up about the time of vintage, as it is then fullest of its powerful juice. The same author observes, that in some countries they eat the fruit or berries of this plant; but those who do not understand the manner of preparing them, sometimes lose their tongue, and become dumb after eating them. We learn both from ancient and modern writers, that the Mandrake root is an anodyne and soporific of a dangerous nature, if not administered with great judgment, as it has been known to excite maniacal fury, and has sometimes proved to be a mortal narcotic. The berries have, however, been eaten without producing this effect; but we cannot help condemning all such idle experiments, since it is known that the seeds certainly possess deleterious qualities.

Roots.

It has been well observed that a root is never green, even when exposed to the air and light. Its principal office seems to be to fix the plant to the earth, and supply it with nourishment. The mode in which it fulfils the former office is evident enough, but the latter needs some explanation. We have before mentioned the little bundle of leech-like mouths or tubes, called spongioles; these are endowed with a peculiar power of only sucking up and



Drawn by E. Whipple

digesting what is proper for the plant; they have little sentinels at the doors which reject improper and poisonous substances. The life-power, in many instances, holds a close analogy with the mind, and like it, what is offensive at first, may, by continual repetition, become at last agreeable, and even sometimes necessary; we have a good example of this in the influence of tobacco, opium, and many other articles on the human frame, which furnishes instances of what is called Tolerance of the Vital Powers. Dr. Mitchell, of this city, had some peaches sent to him which were perfectly salt; some brine had been accidentally thrown at the base of the tree; the salt bribed the sentinels, as it were, to admit its particles, and it thus became universally disseminated even in its fruit. Alcohol has found entrance into the drunkard's veins, and when drawn from the arm has been ignited by a torch. These, of course, are rare instances, yet answer to illustrate the general principle. The root is that portion of the embryo called its descending axis, which, when acted upon by the same influences as the stem, goes downwards, while the other ascends. Like an icicle, as a general rule, they increase in length by the addition of new matter to their extremities, which, of course, is furnished from within, and not like the freezing particles, from without.

With respect to duration, roots are either annual, biennial, or perennial. As roots are reservoirs of nourishment for the plant, which is expended in its growth, when it happens that the plant consumes its supply as fast as it is elaborated, and ripens seed, that most exhausting process to a plant, it has nothing after this is done to afford it sustenance, and consequently dies the same year it springs up; such plants are termed annual. But there is another kind which lays up a large store, and by not flowering, or even spending much in the way of stems and branches, having oftentimes but a mere bunch of leaves above the surface of the ground to assist the working up of the food, waits the second year, when its growth is remarkably rapid and vigorous, shooting forth a large stem, and bearing flowers and fruit, and having consumed all its capital, perishes like its predecessor—these are termed biennial. The third class or perennial, while one portion is consuming, is busily employed in laying up a store for the ensuing year, and thus continues to live a long while.

The first class, or annual plants, have always branching, fibrous

roots, merely adapted for absorption from the soil ; they resemble, in shape, the inverted branches of a tree : such are mustard, barley, peas, beans, cucumbers : see fig. 43.

The second class, from their accumulation, swell out into various shapes ; those of the carrot are a common example, fig. 44 ; the reservoir being in the main trunk.

The third class have many forms, the rose, geranium, &c., are examples. Many of them become annual by transplantation into cold climates, and vice versâ.

Fig. 39 shows a scaly bulb, as in the white lily. Fig. 40, a solid bulb, as in the crocus. Fig. 41, Transverse section of a coated bulb. Fig. 42, a tubulous and pendulous root, as in the peony. Fig. 45, a creeping root.

Fig. 35 shows the seed of a bean split in two ; AA are the cotyledons or seed-leaves, to afford sustenance and protect the germ. d Is the plumula or ascending axis, which is finally developed into a stem on which the leaves and fruit are formed. e The descending portion or root, which we have already described. b Is the plant itself, in miniature. The point of union of the ascending and descending axis, the crown or neck ; it is also sometimes termed the collar. The name cotyledon comes from the Greek, *kotule*, a cavity. The number of these varies in different plants ; all having two are called Dicotyledons, like the bean ; if but one, they are Monocotyledons, as the grasses and lilies. If, as in the case of the mosses, we cannot trace any seed-leaves, we term them Acotyledons. There are, sometimes, though rarely, plants having more than two, to which the name of Polycotyledons is applied. As the number of these seldom varies in the same family, they have been assumed as a ground of classification by many botanists. An ancient botanist remarks, that the embryo continues imprisoned within its seed, and remains in a profound sleep, until awakened by germination, it meets the light and air to grow into a plant similar to its parent. If, therefore, the simple laws upon which plants are constructed are kept in view, they will afford a ready explanation of all the diversities exhibited by vegetables.

The Heliotrope.

THIS flower, though in a different genus, and totally unlike the sunflower, is often confounded with it. To both of them has been ascribed the now obsolete notion of their having the property of turning to follow the course of the sun in the heavens; a property possessed in a minor degree, undoubtedly, by many flowers, but which arises from mechanical causes mostly, and is by no means universal. We have many species common to our country, but the one represented in our plate is, perhaps, the finest of all. It is much prized as a hot-house plant, both in this country and in Europe.

The *HELIOTROPIUM PERUVIANUM*—*PERUVIAN HELIOTROPE*, is an evergreen trailer, a native, as its name denotes, of Peru. The generic name was given by Jussieu, who, while botanizing in the Cordilleras, suddenly inhaled the most exquisite perfumes. He expected to find some brilliantly colored flowers, but perceived only some pretty clumps of an agreeable green, bearing flowers of a pale blue color. The clusters are generally composed of small, delicate, fragrant flowers, of a faint purple or white, sometimes red or bluish white. On approaching nearer to them, he observed that the flowers turned gently towards the sun, which they appeared to regard with reverential love. Struck with this peculiar disposition of the plant, he gave it the name of *Heliotrope*, which is derived from two Greek words, signifying to turn with the sun. The learned botanist, delighted with the acquisition, collected a quantity of the seeds and sent them to the *Jardin du Roi*, at Paris, where it was first cultivated in Europe. The ladies collected it with enthusiasm, placed it in their richest vases—called it the flower of love—and received with indifference every bouquet in which their favorite was not found. It bears sweet, lilac looking flowers, from May to September. The character of the genus is:—calyx tubular, five-toothed; corol salver-form, cut in five pieces, and toothed in these divisions, with an open throat. The specific character is:—leaves oblong,

lanceolate; stem shrubby; spikes numerous, aggregate, corymbose. Amié Martin remarks, that the Orientals say that the perfumes of the Heliotrope elevate their souls towards heaven. It is true they exhilarate us, and produce a degree of intoxication. The sensation produced by inhaling them, may, it is said, be renewed by imagination, even though years have passed away since the reality was experienced. We think, however, it requires a very considerable exercise of this power to produce such an effect, and even then not more in this case than it does in others. The Countess Eleanora, natural daughter of Christian IV., King of Denmark, who became so notorious by the misfortunes, crimes and exile of Count Ulfeld, her husband, offers to us a striking proof of the power of perfumes on the memory. This princess, at the age of thirteen, had become attached to a young man to whom she was subsequently affianced, but who died in the castle while they were making preparations for the marriage. Eleanora, in despair, wished to take a long, last look of the object of her love, and if alive, to bid him a last adieu. She was conducted into the chamber where he had just expired, and the body already placed on a bier and covered with rosemary. The spectacle made such a deep impression on the affianced maiden, that though she afterwards exhibited courage equal to her misfortunes, she never could breathe the perfume of rosemary without falling into convulsions.

HELIOTROPIUM INDICUM—COMMON TURNSOLE, is distinguished by its rough, sharp leaves, somewhat heart-shaped. The spikes are solitary, and do not present so pleasing an appearance as the other. It flowers in July; the mild blue color harmonizes well with the leaves. Its fruit is bifid. The whole height of the plant is from six to fourteen inches.

HELIOTROPIUM CURASSAVICUM—EMILY's BROOCH, is a low plant, from six to ten inches in height, giving out yellowish white flowers, in June, on spikes, which grow in pairs. The leaves are long, narrow, lance-shaped and thick, without either apparent hair or veins:

There is another species commonly known, with white flowers, and inodorous. These are all in the class Pentandria, order Monogynia.

Tyas remarks, that an anonymous writer has made it emblematical of flattery, as it is said, when a cloud obscures the sky,



*American Cowslip Dodecatheon Meadia.
Ranunculus Ranunculus Asiaticus.
Heliotrope Heliotropium Peruvianum*

Drawn expressly for J. K. Willman

to droop its head. But others suppose, that like the lover, whose heart is sad when absent from his mistress, so the Heliotrope droops because it is deprived of the cheering rays of the sun it seems to adore. We give it, in accordance with this last opinion, as the emblem of DEVOTED ATTACHMENT.

There is a flower whose modest eye
Is turned with looks of light and love,
Who breathes her softest, sweetest sigh
Whene'er the sun is bright above,

Let clouds obscure or darkness veil,
Her fond idolatry is fled,
Her sighs no more their sweets exhale,
The loving eye is cold and dead.

Canst thou not trace a moral here,
False flatterer of the prosperous hour.
Let but an adverse cloud appear,
And thou art faithless as the flower!

The Ranunculus.

THIS type of a natural order, the Ranuncuaceæ, is found in the class Polyandria, order Polygynia. The generic name is derived from *rana*, the Latin name of frog, because most of the species grow in fenny places where these animals abound. It contains a great number of acrid, bulbous, or tuberous-rooted perennial plants. Its characters are: Calyx five-leaved; petals five to eight, with a honeyed pore at the claw; seeds naked. Many of its species are remarkable for the virulent poison which often lurks beneath their beautiful exterior; most of them will blister the skin if applied externally to the human body, not to mention the fatal effects that would result from taking them into the stomach. Some of them are double and much valued by florists, commanding as they do very high prices. The subject of our plate is one of these, and, with its various colored, double flowering varieties, is one of the greatest ornaments of the garden, presenting brilliantly colored flowers, nearly as large as roses, and coming out at an early season of the year. The roots of

these in a dry state, consisting, as Nuttall observes of little tufts of cylindric tubes, are commonly imported, as well as those of the Anemone from, Holland, the great mart of the florist. It grows naturally in Persia and other eastern countries. The Turks cultivated it at Constantinople, for several ages before it was generally known in other parts of Europe. In their language, it is called Tarobolos Catamarlale, and their account of it is, that a vizier, named Cara Mustapha, who delighted to contemplate the beauties of nature in solitude, first observed, amongst the herbage of the fields, this hitherto neglected flower, and wishing to inspire the then reigning Sultan with a taste for plants similar to his own, he decorated the gardens of the seraglio with this new flower, which he soon found had attracted the notice of his sovereign, upon which he caused it to be brought from all parts of the East, where varieties could be found. But enclosed within the inaccessible walls of the seraglio, these flowers remained unseen by the rest of the world, until bribery, which surmounts the loftiest towers, and breaks the strongest bolts, entered the palace of the Sultan, and secured the roots of these highly cherished plants, which soon flourished in every court in Europe. We are told that this fine flower was one of the fruits of the Crusades, and that St. Louis first brought it into France. It must soon have been lost in that country, for Gerard, in the reign of Queen Elizabeth, tells us, that this kind of *Ranunculus* "groweth naturally in and about Constantinople and Asia, on the further side of the Bosphorus, from whence plants have been brought at divers times, but have perished by reason of the long journey and want of skill in the bringers, who suffered them to lie in a box, that when received, they were as dry as ginger. The other kind, he says, grows in Aleppo and Tripoli, and in Syria, naturally, from whence plants were received, and which flourish as if they were in their own country."

The Dutch, who studied floriculture as an art connected with commerce, soon turned the cultivation of the *Ranunculus* to a profitable account; and they still continue to export these roots in great quantities to every part of Europe and America, although the English are said to have raised a greater variety of them than any other nation. Maddock, who had upwards of eight hundred sorts, says there are more varieties of this than of any other flower; and he observes, that the seed in no instance ever pro-

duces two flowers alike, or one similar to the parent plant, so that the diversity of them may be carried to an amazing extent. The finest and most approved sorts are propagated by dividing the tubes, or by offsets from them; a means of proceeding which will make them retain all their original character for more than twenty years. The most hardy of the garden species, even the AFRICAN—*R. SANGUINEUS*, which makes a brilliant appearance by its vivid scarlet color, are but little esteemed in comparison with the Asiatic. The African differs from it in having fewer but larger leaves, which are of a darker green than those of the latter kind. The stem seldom produces more than one flower and never exceeds two; but these are considerably larger than those of the Persian, and very double, and a stem is frequently thrown up from the centre of the flower, bearing a second corolla of a smaller size. There are several varieties of this one kind, of the color of the jonquil, another of the hue of the golden marigold, with a green heart; but the variety most esteemed is of a fine red color, spotted with yellow, called the Golden Turban. As these kinds are less susceptible of frost than the Persian, the roots are generally left in the earth throughout the year; but this is a bad practice, as, when the soil or season is wet, they are sure to return to their natural red color, by which means the most beautiful varieties are frequently lost. This has not what is generally termed either a palmated or tuberous root, but consists of fibres. When the plant begins to vegetate, there grow out of the part which surrounds the eye many thin white threads, that are of equal dimensions all their length, till they have finished their growth; they then swell out at the part adhering to the trunk, and form one or more claws adhering to the old one, which after having furnished the new ones with the nutritive juices they contained, or enabled them to procure strength, the old tubers are decomposed, and consequently vegetate but one year, after the manner of many bulbs, or in a similar way to the buds of trees, which throw out branches that form other buds whilst the original is no more. Our species varies more in its color than even the tulip, running from a black down to white, through all the shades of reds, yellows, and browns; and indeed all colors, excepting blue, may be found in these gaily painted flowers—the criterion of whose perfection is, that they should produce a strong stem not less than from eight inches to a foot, and that they

should bear a flower at least two inches in diameter, well filled with concave petals, that diminish in size as they approach the centre. The corolla should be of a hemispherical form : its component petals should be imbricated in such a manner as neither to be too close and compact, nor too widely separated, but have rather more of a perpendicular than a horizontal direction, to display their colors with better effect. The petals should be broad, and quite free from fringe or indentures at the edges ; the beauty of their coloring consists in their being dark, clear, rich, or brilliant ; either of one regular color throughout, or otherwise variously diversified, on white, ash, pale yellow, gold or fine colored ground, either in regular stripes, or spots, or marble mottled.

The aspect most congenial to them is that of the east, where the situation is open, but free from draughts and sheltered from the violent westerly winds that generally prevail during the early part of their growth. The soil recommended by Maddock, the greatest cultivator known of the *Ranunculus*, is a fresh, strong, rich, loamy earth. An earth that cakes on the surface is the worst that can be used to cover the tubers, and where the soil is of that nature we should recommend a mixture of sand, more particularly as the fibres of the tubers do not depend on the surface soil for nourishment, but run deep into the earth. On this account the earth should be dug out two feet in making the beds, and a stratum of six inches be placed of well rotted manure ; the hole then filled up with common pulverized earth ; on this the tubers should be placed about four inches from each other, with their claws downwards ; and where the earth is of a cold or wet nature, a little sand should be placed beneath each plant, and the whole covered with a fine, light soil, as nearly as possible one inch and a half in depth, which may be so much higher than the bed of the border where they are planted in clumps. This should be done in very early spring, and should severe frosts come on, cover the spots of ground with loose moss or straw, which must, however, be removed at the earliest opportunity, as it may make them mouldy, and finally kill them if too long smothered. A light cover of moss laid between the plants when they appear above the surface, will be useful in breaking the force of hasty showers and the waterings it is sometimes desirable to make. When the foliage is changed and partly decayed, it will be well

to take the roots out of the earth, doing it so as not to break off the tubers. The stems should next be cut close off, and their claws well cleansed and separated after they become dry and brittle. A sieve, worked in water, is sometimes useful in doing this. They should then be dried in a shaded place, and afterwards tied in bags which hang suspended in a dry room. The offsets attain perfection in the season of their formation; but where there are few, and it is desirable to increase the number, the tubers may be carefully divided with a sharp knife; for on closely examining the crown of these roots, several small protuberances will be found, from each of which a shoot will arise. Seed for raising these plants should be procured from semi-double flowers, that grow on strong tall stems, where the petals are of a clear and rich color. It should remain on the plant till it has lost its verdure, and become dry and brown. The heads are then to be cut off and dried, and put in a warm dry place until they are wanted for sowing, when they should be put on a tea-tray and placed before the fire till they are just warm, and the seeds can be carefully scraped off with a small knife. When done properly, they will have the appearance of clean coarse bran, with a spot in the centre of each cuticle, which is the kernel. When the seed is thus prepared, it should be sown in a shallow frame provided with sashes; the soil should be previously taken out three feet deep, and spread thin upon the ground till it has been perfectly frozen throughout, in order to destroy vermin; filled again with the frozen earth, it should remain till all has thawed and subsided to its old bulk; on its smooth surface the seeds should be sown so as to cover it, and tight glasses placed over the whole till the seed begins to swell, and a little earth sifted over the whole gradually once or twice a week, till the seed disappears, taking care to remember that the thickness of a twenty-five cent piece will entirely prevent their vegetation. It is well to carefully break the earth around the plants as they first sprout up. Under a hot sun, it is necessary to admit fresh air, and sometimes also the summer shower. This attention is requisite till the foliage is dry and brown. The roots are then to be taken up, as already advised; those with two or three claws will blow the following summer.

Neither the Persian nor African *Ranunculus* was known to the Romans at the time of Pliny, who has described four species

without noticing the beauty of the flower. From its caustic and burning qualities, the green leaves were used to draw blisters and take off marks in the skin, as well as for leprosy. Pliny tells us the root was chewed as a cure for the toothache, but that if kept long in the mouth it destroyed the teeth. The ancients also used it to poison the points of their arrows. Dr. Bigelow tells us it is a remarkable fact, that a great portion of the weeds which are most troublesome in the United States, are of European origin, having introduced themselves in this country. Among others, are the *Ranunculus* species or Buttercups, as they are commonly called; the whole of which have a remarkable resemblance to each other, which shows their relationship at first sight. The *Ranunculus Bulbosus*—*BULBOUS CROWFOOT*, is known by its compound leaves, and its erect, many-flowered stem; the stalk that supports the flower is deeply furrowed, the flower-cup turned back, and the root bulbous, from whence its name. It is found in dry pastures, mowing lands, and roadsides, where it flowers abundantly from May to the middle of June. We are told that a curious practice prevailed at one time, in several countries of Europe, of applying this root to the wrist or fingers for the cure of intermittents. The operation, when used medicinally, is violent and uncertain, and will always prevent its general use. In some cases, ill-conditioned sloughing ulcers followed its external application, which were healed with difficulty; in others, gangrene. Linnæus tells us that the beggars of Sweden blister their feet with it in order to assist them, by producing ulcerations, in extorting charity from passengers. Cows will not touch this genus, with the exception of one species, which they are said, in England, to eat with avidity. Hogs, of course, devour it with perfect impunity. Cultivated *Ranunculus* seems to lose, in a great measure, these pernicious qualities, but we are not aware that it is used for any medicinal purposes. The Asiatic *Ranunculus* is the emblem, in floral language, of the sentence, **YOU ARE RADIANT WITH CHARMS.**

Yellow king cups, bright as gold,
I love your blossoms to behold,
Making all the meadows gay,
In the pleasant month of May,
Till the mower cuts you down,
And turns your yellow flowers to brown.

The American Cowslip.

THE genus to which this plant belongs, is in the class Pentandria, order Monogynia. Its characters are : Calyx five-parted; corol also five-cleft, and wheel-form, reflexed; oblong capsule, one celled, opening above; short stamens, inside the tube with converging anthers; stigma obtuse.

Meadia's soft chains five suppliant beaux confess,
And hand in hand the laughing belle address;
Alike to all she bows with wanton air,
Rolls her dark eye and waves her golden hair.

DARWIN.

The petal, stamen, and the pistil trace
Of common blossoms and of unknown race;
The first well pleased you mark with grateful sight,
And view the last with hope's bewitching light.
What sudden pleasure when some object rare,
Confined peculiar to one soil and air,
More precious far from expectation grown,
By some blessed turn upon the sight is thrown.

DELILLE.

The DODECATHEON MEADIA—AMERICAN COWSLIP, is an ornamental perennial, bearing light purple flowers in May and June. The leaves spring from the root, and lie flat on the ground. The elegant stem of a single root of this plant rises from the centre of the rosette of large leaves. It was first found by Michaux in the Alleghany Mountains, and was subsequently discovered to be very common in the woody country of Northern America. One of our own writers compares them to a cluster of bright yellow polyanthus. Our gold Cowslips, he adds, look like a full branch of large clustering king-cups; they carelessly raise themselves on their prim stalks, their corollas gazing upward to the changing spring sky, as they grow amidst their pretty leaves of vivid green. They adorn almost every meadow, and shed a glow of beauty wherever they spring. Phillips remarks that the delight with which the botanist views a newly discovered plant, can only be conceived by the students of nature; it seems to expand his ideas and give him a new conception of the wisdom of the Great Creator. He contemplates with admiration the harmony of its parts which he finds so happily adapted to its native situation on the globe; learns by the character of the

plant, the climate to which it belongs, and he soon conceives the utility of the individual plant to the grand link of vegetation by which the animal world is supported. The pleasure of first meeting with an unknown plant has thus been described by the poet :

He marks the treasure with an eager glance,
"Great God," exclaims, and forth his hands advance,
Sudden to seize the prey; not more delight
Feels the fond lover at his mistress' sight.

He deems it as the most important event of his life, and he joyfully bestows on it the name of some esteemed friend or eminent countryman ; his fancy pictures it growing under cultivation with his native plants ; his immediate acquaintance covet it for his sake, and his name is justly registered among those who have benefited their country by peaceable pursuits. Mr. Catesby, in his Natural History of North Carolina, gave it the name of Meadia, in honor of Dr. Richard Meade, an English physician of that day, who, like some of the present time, was courted by the wealthy and adored by the needy of his country, whilst his name was revered by the eminent of all parts of Europe. On this account we feel regret that Linnæus should have thought it necessary to change the generic term of this plant, and more particularly so since he has bestowed upon it one that seems so inappropriate, Dodecatheon being derived from the Greek words which mean twelve gods ; and the only cause he could have adopted for so whimsical a name, was from the observation that each of those plants generally produced twelve corollas. Meadia, however, remains as the specific name of this species. This elegant plant flowers about the end of April, or the beginning of May. The stalk often rising to about eight inches in height, throws out an umbel of flowers gracefully pendant, as rockets appear when thrown out of an elevated piece of firework. The petals are of a rosy lilac, inclining to the color of the peach or almond blossom ; and they are reflexed or turned back over the calyx, giving the appearance of a half-expanded parasol, which resemblance is considerably heightened by the long tapering shape of the parts of fructification, and the golden color of the anthers. When taken in the garden, it should be planted in a shady situation, where the earth is of a loose, moist nature ; but its

beautiful delicacy and graceful formation make it deserving a situation, even amongst the plants that are potted for the house. It is easily propagated by offsets, which should be taken from the old plants in the month of August, that they may be well fixed to the earth before the frost comes on. It is increased more rapidly from seed which the plant generally produces in plenty; these should be sown, soon after they are ripe, either in pots or in a shady border. If too much exposed to the sun while young, they are almost sure to perish, so impatient are they of heat. Many persons have lost their stock of these plants, more especially in England, where they are much prized, by placing them in dry soil in a sunny part of the garden without thinking of their original home. It is the emblem of **You are my Divinity.**

PRIMULA VERIS—ENGLISH COWSLIP, is very different from the false or American flower of that name; they belong to the same class and order, but are of a different genus. It is therefore this, and not the one native with us, which has been for so long a time the theme of the English poet. Shakspeare celebrates it in his Midsummer Night's Dream, where, in a few lines, he makes it subservient to the Queen of the Fairies, describes the character of the corolla, and alludes to the institution of tall military courtiers which were pensioned by Queen Elizabeth.

And I serve the Fairy Queen,
To dew her orbs upon the green:
The Cowslips tall her pensioners be,
In their gold coats spots you see.
These be rubies, fairy favors;
In those freckles live their savors.
I must go seek some dew drops here,
And hang a pearl in every Cowslip's ear.

The corollas of these are often gathered to make a kind of wine, and sometimes also mixed with tea to give it a flavor; or used alone in infusion as an anodyne and antispasmodic. The name originated from the Saxon Cuslippe, from the odor resembling a cow's breath. Silk-worms can be kept alive on its leaves, but will produce no silk except on mulberry diet. The leaves were formerly eaten as salad, but lettuce and many others are so much better that these are banished from the gardens for kitchen purposes.

The Meadow Saffron.

THIS is a genus of the class Hexandria, order Trigynia. Its characters are :—corolla six-parted, with a rooted bulb; capsules three, connected, inflated. Specific character :—leaves flat, lanceolate, erect. Lindley observes, that since both the asphodel and lily tribes are generally harmless, it becomes highly important that all possibility of confounding them with a poisonous order which they in some respects resemble, should be guarded against. Meadow Saffron, white hellebore, and some other plants, have a structure very analogous to theirs. A calyx and corolla, each of three leaves, of simple form and texture, half a dozen stamens, and a superior three-celled ovary, also characterize, in part, the natural order called the Colchicum tribe, to which these plants belong. Colchicum itself is very like a crocus in flower, but its superior ovary prevents its being confounded with the tribe in which the crocus is included. The species of melanthium and helonias are so similar in appearance to many of the Asphodel tribe, they would no doubt be referred to the latter by a young botanist. They, however, Meadow Saffron, and all the rest of the colchicum tribe, may be recognized at once by three marks. In the first place they have no bulbs, but in their stead a solid knob or subterranean stem; secondly, their anthers are turned away from the stigma, splitting and emitting their pollen on the side next the petals; and lastly, the three carpels out of which the three-celled ovary is constructed, are separated at their points, so that there are three styles instead of only one. These signs must be trusted to in the determination of the colchicum tribe; they may appear slight, and you may wonder why such trifling distinctions should serve to distinguish poisonous from wholesome tribes; but with considerations of the causes of such a fact we have no concern; all that it imports us to know, is, that Providence has distinguished them by such minute marks, and has thus provided man with safe and unerring guides, if he will but learn how to follow them. Phillips observes, that Shakespeare says in his play of Cymbeline :

One that's sick of the gout had rather
Groan so in perplexity, than be cured
By the sure physician, Death.



COCHICUM AUTUMNALE.

Meadow Saffron.

Drawn expressly for J.K. Wellman.

To such sufferers, we therefore address our history of the singular plant which has been named Colchicum, from its growing so abundantly in the city of Colchis, a city of Armenia, celebrated for its numerous poisonous plants, and as the birth-place of Medea. It is thus noticed by Horace, in the thirteenth ode of his second book :

Or tempered every baneful juice,
Which poisoned Colchian glebes produce.

Fabulous history informs us that this autumnal flower owes its origin to some drops being spilt in the fields of the magic liquor which Medea had prepared to restore the aged Æson to the bloom and vigor of youth, and on this account the Colchicum was regarded as a preservative against all sorts of maladies. Could we divest the tales of antiquity of their fabulous dress, we should find them all explanatory of real events, and not the mere ideas of poetical imagination ; perhaps we should then discover that Medea having relieved Æson from a fit of the gout, his subjects celebrated her praise as having restored this monarch to youth and sprightliness. As Medea is sometimes called Colchis, we will surmise, for the consolation of our gouty friends, that it was the Colchicum that relieved Æson from his infirmities ; and we also hope that they may derive similar benefit through the aid of their medical friends, assisted by the virtues of this powerful plant. The Swiss peasants tie the flower of this plant around the necks of their children, with a firm belief that it will render them invulnerable to all diseases. It is thought to be the same root as the Hermodactylus of the ancient physicians, which, after having been entirely disregarded for many generations, is now again become an important article in the *Materia Medica*. It was for some time employed in the form of a concealed medicine under the name of *Eau Medicinale*, which attracted great attention by its success in relieving the gout and rheumatic affections of the joints, but which has also frequently taken an injurious effect upon the constitutions of some persons ; it is therefore a medicine that should only be applied by the most cautious practitioners ; for the Colchicum is unquestionably a poisonous root, and its deleterious effects are to be dreaded, until the precise dose is more accurately ascertained than it seems to be generally at this time. Mr. Waller observes, in his account of this plant, that one great

cause of this difficulty is the extreme affectation of simplicity in the modern practice of pharmacy, and the dislike of practitioners for what they consider complicated prescriptions. It is, however, a fact, that vegetable juices brought into contact with each other, do undergo a chemical change, and a compound is produced very different from what might be expected from a mere mixture of the two. This fact has long been known to wine and cider makers, who are well aware that there is a very considerable difference between the mixture of two different wines or ciders, and that which results from the mixture of the two juices previous to fermentation. In the former case the mixed liquor will partake of the properties of each, but in the latter a distinct variety will be formed, in which neither can be recognized. The specific gravity of the juices is also changed, which proves that a chemical action has taken place. The most eminent practitioners of modern times have acknowledged the extraordinary effects of the Colchicum in relieving that complicated form of disease called rheumatic gout; but they have at the same time regretted the intractable nature of the medicine which is so uncertain in its effects. *Mr. Waller is of opinion that much of this variety and uncertainty depends upon the season in which the roots are dug up;* he recommends the end of April or the beginning of May as the most desirable time; this is for England, and of course would be somewhat later in our own climate. It now appears that the medicinal virtues of the Colchicum are not confined to the gout and the rheumatic affections of the joints only, as Mr. Haden has lately published a treatise on the properties of this root as a remedy against the most decidedly inflammatory cases, such as pleurisy, pneumonia, and other equally well ascertained cases of increased action; he wrongly ranks its action as being synonymous with that of bleeding. Mr. Haden generally recommends the powdered root, five grains three times a day to an adult, whilst Mr. Waller thinks the tincture to be more uniform and certain in its effects, and in this latter opinion we fully concur. It is now much used in the United States. The living bulb is generally imported, packed in sand, and dried immediately after its reception. The sprouting of the flower bud during transportation does not seem to lessen its activity. As its sensible properties vary according to the season of the year in which it is gathered; highly acrid in

the beginning of summer, almost inert in autumn, we can understand that while some have found it a corrosive poison, it has been perfectly inert to others. Professor Murry gives many instances in which it produced distressing and fatal effects; while on the other hand, an author by the name of Kratochville asserts that both himself and others have eaten drachms of the root in spring and fall with impunity; and Orfila mentions having given bulbs to dogs in the month of June, without any bad effect resulting.

The seeds of this plant are far preferable to every other part for medicinal purposes, as their action, being equally efficacious, is more mild and uniform; two ounces of these are infused in a pint of sherry wine, and from fifteen to forty drops of this given once or twice a day, with a teaspoonful of magnesia, the whole mixed with aromatic waters.

The poisonous properties of this plant, continues Phillips, seem known to all animals, as it were, by instinct, since no cattle will touch it; the very lambs fly at its aspect, and the young shepherdesses of the mountains become sorrowful when it appears amongst the grass, lest their playful flock should inadvertently swallow it. It is no uncommon thing to see those plants standing alone in pastures, where every other kind of herbage has been eaten down, without a leaf of them being touched. The French give it the appalling name of Kill Dog. In Floral language, this flower expresses, MY BEST DAYS ARE PAST; for far from inspiring us, like the crocus, with joy and hope, it appears to announce to all nature the loss of the fine days, and the approach of a cheerless atmosphere. It appears naked, like a sprite among flowers, to warn them of their destiny; and nature seems to have reversed its order in some of the characters of this curious plant, which cannot fail to interest the student of natural history and botany; and the closer they investigate the apparent phenomena of the Colchicum, the more will they be struck with the wonderful arrangements that the all wise Creator has adapted in the formation of vegetables which appear, on a superficial inspection, to act by contrarieties, whilst their actions are governed by the most consummate wisdom. Regarding the Colchicum in its native English pastures, we shall find that its corolla is sent out of the earth with its parts of fructification, at a season when they have only time to mature their anthers, that the stigmas may receive

and convey the fecundating particles of vegetable nature to the numerous empty seed-shells that are prepared to receive them in the three-lobed capsule. As the season of the year would not allow the fruit of this late flowering plant to ripen so as to multiply its kind, Providence has so contrived its structure that it may be performed at a depth within the earth, out of the reach of the usual effects of the frost; and as seeds buried at such a depth are known not to vegetate, a no less admirable provision is made to raise them above the surface when they are perfect, and to sow them at a proper season. For this purpose, the seed-vessels are lodged in the bosoms of the embryo leaves, and are consequently thrust forth with the foliage in spring; this caused it to be formerly supposed that it produced its seed before its flowers, and for want of investigation alone, this error obtained general belief. By the end of May they are generally ripe, the leaves wither and the root decays, having finished its duties, not only by its oviparous nature, but by having, at the same time, given birth and nourishment to a new bulb in the earth, by its viviparous powers. The new bulbs take their rise from the caudex, at the base of the flower tube, and are united by communicating vessels to the old bulb, from the juices of which the new bulbs extract their nutriment until the parent bulb decays, as in the case of the tulip. The Colchicum has generally perfected its bulb by the middle of May; and as no exhaustion has then taken place, in forming either flowers or foliage, it is natural to suppose that the bulb must be then possessed of the most powerful medicinal properties. In September, it sends up a flower similar in appearance to the purple crocus, excepting that it is quite destitute of foliage, and hence named by the English peasantry the Naked Lady. The flowers are monopetalous; the six deeply divided segments being united to the neck of the corolla, which forms a long tube, reaching the bulb in which the seed-vessel is seated, and from whence the three long styles proceed through the neck of the corolla, carrying their stigmas to a sufficient height out of the ground to be matured and impregnated by the farina of the six anthers, which are also carried up to the air by being united to the corolla. When the necessary properties of the farina have been received by the stigma, and conveyed to the seed-vessels by means of the long styles, the flower decays, and the fruit continues to grow until the spring, when it is sent out of the ground under the

guard of the four leaves, which afterwards separate and the seed soon becomes ripe. Thus this plant, reversing the accustomed order of the seasons, mingles its fruits with the flowers of spring, and its flowers with the fruits of the autumn. For cultivation, the bulbs should be taken out of the ground when the leaves are decayed, and preserved like other flowering bulbs; but in August, they should be committed to the earth, at about three inches in depth, forming them into clumps wherever it may appear desirable to add dwarf flowers. They have the best effect when springing out of the turf, as the naked appearance of the flower is not then so conspicuous, and the purple and white corollas shine to more advantage on the green sward than on the bare earth. There are several varieties, some being perfectly white, others of a light or dark purple, and some that have the petals striped with white and purple, and these are still further increased by the flowers being doubled.

The BROAD-LEAVED MEADOW SAFFRON—*COLCHICUM BYZANTINUM*, is a distinct species that grows naturally in the Levant, and was introduced into England in the reign of Charles the First; this, with the CHEQUER FLOWER—*C. VARIEGATUM*, was amongst the flowers that were cultivated in the parterre of the unfortunate Queen Henrietta Maria. The latter species was originally brought from the Greek Isles, and as it is more tender than the other kinds, it is generally treated as a green-house plant, and frequently blossoms as late as November, displaying its beautifully spotted corolla amongst the latest of Flora's gifts. The common Meadow Saffron may be increased by the seeds, and treated in the manner already directed for the raising of hyacinths. The following beautiful lines relating to it, are taken from the Moral of Flowers :

Why mourn, dear girl, each passing year ?
Why dread the sobering touch of time ?
As if all bliss to mortals dear,
Thoughts which enoble, hopes which cheer,
Fled with our prime.

Look up ! this calm autumnal day
May want the joyousness of spring ;
But never did capricious May
Such kindly warmth, such steadfast ray,
O'er nature fling.

What though the leaves, now changed in hue,
 Bestrew our path where'er we turn,
 If yonder “heaven’s delicious blue,”
 Through their thinn’d bough we clearer view,
 Ah ! who would mourn ?

And see, I’ve brought a little flower,
 No lingerer it of summer’s train ;
 Like vesper star to eve’s dim hour,
 It comes to deck pale autumn’s bower,
 And leaf-strewn plain.

Seest thou my meaning ? youthful joy,
 And hope may fade, like summer’s show ;
 But if thy disenchanted eye,
 With freer gaze can look on high,
 Why, let them go.

Yea, go—without or sigh or tear ;
 For oh ! if holier hope be thine,
 Think not thou’lt lack, whilst wandering here,
 A beam to light, a flower to cheer
 Thy calm decline.

The Apple.

THE Apple genus belongs to the natural order Rosaceæ—class Icosandria, order Pentagynia. Its characters are :—calyx five-cleft; petals five; pome inferior, five-celled, many-seeded. Specific characters :—leaves ovate, acuminate, serrate, smooth; umbels simple, sessile; claws of the corolla shorter than the calyx; styles smooth. Lindley observes, in tribes related to the Rose, the Apple takes the first rank, agreeing with it in everything but the carpels being distinct and superior, in lieu of which they have the carpels united and adherent to the tube of the calyx. The tree has leaves with netted veins and stipules at their base. The calyx has five divisions, the petals also five; and there are a great many stamens growing out of the side of the calyx. In the centre you will find five styles, but their ovaries, instead of being merely enclosed in the tube of the calyx, adhere and form one body with it. It is this circumstance that gives rise to all the difference in the fruit. An apple is a large, fleshy



PYRUS MALIS — APPLE.

Drawn expressly for J.K. Wellman.

body, having at one end what is called an eye, which is, in reality, the remains of the calyx surrounding the withered stamens. The principal part of the flesh is the tube of the calyx, but the central part is the carpels, also grown fleshy, and at this period indistinguishable from the calyx itself; that their number was five, is shown by the five cavities in the centre of the fruit, each of which contains one or more seeds. Now it is obvious, if this description be carefully considered, that the fruit is the only thing by which the apple is known from a Rosaceous plant. What is more enchanting, a writer observes, to the lover of nature than an Apple tree, when clad with its beautiful bloom in the early spring? And the more, that they hold forth the promise of an abundance of delicious fruit. The Apple bloom is indeed a charming flower, and by some has been preferred before the rose. The common Crab tree is the parent of all the immense variety of Apples at present cultivated, and there are few genera which so amply repay the trouble as does this. Our NATIVE CRAB—*PYRUS CORONARUM*, is remarkable for the beauty of its fragrant blossoms, and the leaves, as Nuttall observes, instead of being entire, have an evident tendency to lobing. Its fruit, when ripe, is almost diaphanous, entirely yellow, and on mellowing, becomes very fragrant; little depression at the insertion of stalk.

The Apple is a large, spreading, graceful tree, with ovate leaves, as a general rule; the flowers, agreeably to the economy of this class of plants, come out the second year in beautiful terminating umbels. The fruit is of various kinds, varying in taste from sweet to sour, and in color, from white to green, yellow, red or violet. It is a remarkable fact, that though America is distinguished for her forest trees and elegant flowers, she is still very scantily furnished with fruit-bearing genera; nearly all we have are imported. It should, however, inspire us with feelings of gratitude for the goodness of Providence, when we reflect that all the useful tribes of vegetables may be easily naturalized in any part of the world, and made subservient to the interests of man. The Apple is a native of Germany; it was early known to the Romans, but as they were unacquainted with the art of increasing the varieties, of course, but few in comparison were known to them; when they conquered Britain, this tree, among other valuable gifts, was for the first time introduced into England. Though we have the

native species of our own, which has just been described, still the general opinion prevails among botanists that our stock of Apples originated not from this, but from European importations. As that may be, however, we undoubtedly produce the finest Apples, both for size and flavor, in the world ; those of England and France, by universal acknowledgment, cannot stand, for a moment, a comparison with them. It will flourish, we are told, in every part of the United States, except the low lands of the maritime districts of Carolina, Georgia and Florida, and the low prairies or savannahs bounding the Gulf of Mexico. Ripe Apples form an exceedingly wholesome food, alleviating thirst and fortifying a weak stomach ; they are excellent in dysentery, and equally efficacious in putrid and malignant fevers ; we are told that Scopoli recovered from a weakness of the stomach and indigestion, by using them. Dr. Willach states, that in diseases of the chest, either roasted, boiled, or stewed, they are of considerable service, and may be employed in decoctions, which, if drank plentifully, tend to abate fever and relieve coughs.

Deduct of Mazeras has found that one third of apple pulp baked with two-thirds of flour, having been properly fermented with yeast for twelve hours, makes a very excellent bread full of eyes and extremely palatable. Kenrick says that beaten with lard the pulp forms pomatum ; and quotes Bose to mention that the prolonged stratification of apples with elder flowers in a close vessel, gives the former an odor of musk exceedingly agreeable to those who relish that perfume. The jelly is made by paring them, taking out the core, and putting them in a closely covered pot without water, inside an oven. When cooked, strain the juice through a cloth, add a little white of egg and some sugar, skim the whole and boil it down to a proper consistence. Apples may be preserved in syrup or by thoroughly drying them, and in this state, as Mr. Knight informs us in his treatise on the Apple and Pear, are very valuable, and may be advantageously used on long voyages. Many instances have been cited of their efficacy in curing the diseases of and rapidly fattening up horses, cattle, and swine. The bark of the Apple tree will produce a yellow color, and the wood is used in turning, and for various purposes where hardness, compactness, and variegation of color are the chief objects.

The seed should be sown in autumn in a rich soil. Loudon observes that the Apple, like most other hardy trees, may be propagated by seeds, cuttings, layers, suckers or graftings; by seeds for obtaining new varieties, and by the other modes for continuing such as are in esteem. The seeds should be taken from fruits having the properties it is desired to perpetuate or improve, in the highest degree. In collecting seeds to sow, it should be remembered that the habits as well as the diseases of plants are often hereditary, and attention must be paid to the state of the tree from which the seeds are taken; it should be large, of free growth, and rather in a growing state, than one of maturity or decay. When the shoots spring up, thin them carefully at the distances of two inches apart, and keep them free from weeds. At two years of age, sometimes earlier, says Kenrick, they are taken up, their top roots shortened and transferred to the nursery in rows about four feet asunder, one foot distance from each other in the row in a rich loamy soil. When seven feet high, transplant them to the orchard, in which, in extremely fertile soil, plant them fifty feet apart, but if not extraordinary, half that distance, the idea being to make their shadows cover the ground. Fruit bearing, it is well known, exhausts trees as well as diminishes their growth; consequently the Apple must be very short-lived. A rich soil, rather moist, and on the north side of a hill, is the best. We are told that land half covered with rocks, and incapable of being cultivated with the plow, is in many respects admirably suited for an apple orchard.

PERCIVAL'S THREE FLOWERS

A tulip blossomed one morning in May,
By the side of a sanded alley;
Its leaves were dressed in rich array,
Like the clouds at the earliest dawn of day,
When the mist rolls over the valley.

The dew had descended the night before,
And lay on its velvet bosom,
And its spreading urn was flowing o'er,
And the crystal heightened the tints it bore,
On its yellow and crimson blossom.

A sweet red rose, on its bending thorn,
Its bud was newly spreading;
And the glowing effulgence of early morn
Its beams on its breast was shedding.

The petals were heavy with dripping tears,
That twinkled in pearly brightness;
And the thrush in its covert filled my ears
With a varied song of lightness.

A lily, in mantle of purest snow,
Hung o'er the silent fountain,
And the wave, in its calm and quiet flow,
Displayed its silken leaves below,
Like the drift on the windy mountain:

It bowed with the moisture the night had wept,
When the stars shone over the bollow,
And white-winged spirits their vigils kept,
Where beauty and innocence sweetly slept
On its pure and thornless pillow.

Seeds.

THE best definition we have yet seen of a seed, is that which considers it a germ situated at the axilla of a leaf; which last, besides covering it, is often of a fleshy consistence to afford sustenance to the embryo while germinating, resembling the yolk of an egg which gives a store of nutriment to the young chick. In many cases, as in the farinaceous tribe, we use the albumen, as it is called, to nourish ourselves. They are of different forms in different species, and produced in such abundance that were not myriads destroyed every year, they would soon overrun the globe; and also of various colors. Fig. 28 shows a capsule A, the valves in fig. 29; A A, the receptacles of the seeds. Nature, that leaves nothing undone, seems to take as much care in the distribution of the seed as she did in its perfection. Some capsules are so curiously arranged that the least touch, or even dry weather, will burst them open and scatter the seeds in all



directions ; others are carried by the birds, sheep, clothes of men, &c. ; others again are provided with balloons to transport them away from their parent soil, to settle in new countries ; others with wings, &c. Fig. 31 shows a winged seed, A the seed, B the wing. Fig. 34, a seed crowned with a pappus ; A the seed, B the stipes of the pappus, c d a feathery pappus. Fig. 39, a seed crowned with a calyculus ; A the seed, B the calyculus.

Trunks and Props.

LINDLEY observes, that when a plant begins to grow from the seed, it is a little body called an embryo, with two opposite extremities, of which the one elongates in the direction of the earth's centre, and the other, taking a direction exactly the contrary, extends upwards into the air. This disposition to develop in two diametrically opposite directions, is found in all seeds properly so called, there being no known exception to it, and the tendency is moreover so powerful that no external influence is sufficient to overcome it. The result of this development is the axis or centre round which the leaves and other appendages are arranged. That part of the axis which forces its way downwards, constantly avoiding the light, and withdrawing from the influence of the air, is the root, which we have mentioned before ; and that which seeks the light, constantly exposing itself to the influence, and expanding to the utmost extent of its nature to the solar rays, is the ascending axis or stem. As the double elongation, just mentioned, exists in all plants, it follows that they must have necessarily at an early period of their existence at least, both stem and root ; and that, consequently, when plants are said to be rootless, or stemless, such expressions are not to be considered physiologically correct. The stem has received many names, such as CAUDEX ASCENDENS, CAUDEX INTERMEDIUS, CULMUS, STIPES, TRUNCUS, and TRUNCUS ASCENDENS. It always consists of bundles of vascular and woody tissue, embedded in cellular substances in various ways, and the whole enclosed within a cuticle. When the stem and root, or the ascending and descending axis diverge, there commences in many plants a dif-

ference of anatomical structure, and in all a very essential physiological dissimilarity. This portion is called the NECK or COL-
LUM, and has been thought by some to be the seat of vegetable vitality, which is a very erroneous idea. At first it is a space that we have no difficulty in distinguishing, so long as the embryo or young plant has not undergone any considerable changes ; but in process of time it is externally obliterated, so that in a tree of a few years' growth its existence becomes a matter of theory, instead of being actually evident to our senses. Immediately consequent upon the growth of a plant is the formation of leaves. The point of the stem whence these arise, is called the nodus ; and the space between two nodi an internodium. In internodia the arrangement of the vascular and fibrous tissue, of whatever nature it may be, of which they are composed, is nearly parallel, or at least experiences no horizontal interruption. At the nodi, on the contrary, vessels are sent off horizontally into the leaf ; the general development of the axis is momentarily interrupted while this horizontal communication is effecting, and all the tissue is more or less contracted. In many plants this contraction, though it always exists, is scarcely appreciable ; but in others it takes place in so remarkable a degree as to give their stems a peculiar character, as for instance in the Bamboo, in which it causes diaphragms that continue to grow and harden, notwithstanding the powerfully rapid horizontal distension to which the stems of the plant are subject. All the divisions of a stem are called branches ; an assemblage of these, such as forms the head of a forest tree, is called a COMA. Some branches are imperfectly formed, lose their power of distension, become unusually hard, and acquire a sharp point ; they are called SPINES. Fig. 4, A, simple spines ; B, a triple spine ; occasionally, as in the white thorn, they bear leaves. In domesticated plants they entirely disappear, as in the apple and pear, the wild varieties of which are spiny, and the cultivated ones spineless. These are distinguishable by their woody vascular centre from prickles, with which they must not be confounded. PRICKLES are rigid, opaque, conical processes, formed of masses of cellular tissues, and terminating in an acute point. They may be not improperly considered as very compound indurated hairs ; they have no connection with the woody fibre, and are found upon all parts of a plant, except the stipules and stamens ; rarely they are found

upon the corolla, as in *Solanum Hystrix*; their most usual place is upon the stem, as in the Rose. Fig. 5, A, simple prickles; B, triple prickles. In some cases the petiole of a compound leaf is elongated, branched, and endowed with a power of twisting around any small body that is near it, as in the pea and many others; it is then called a CIRRUS or tendril. It is one of the contrivances employed by nature to enable plants to support themselves upon others that are stronger, and has generally, even by very recent writers, been spoken of as a peculiar organ; but as it is manifestly in most cases a particular form of the petiole, we see no reason for regarding it in any other light. At the base of the petiole on each side, is frequently seated a small appendage most commonly of a texture less firm than the petiole and having a sub-awled shape termination. These two appendages are called STIPULÆ, and considered by many botanists accessory leaves. GLANDS are elevated spaces in the layers of parenchyma, lying immediately below the cuticle or vegetable skin in which they cause projections; they are of various kinds and used for the secretion of different matters, salts, essential oils, &c. Fig. A. a tendril, c, stipulæ, with concave glands on the leaf. Fig. glands on stalks. Fig. 3, A, a Bractea differing from the leaves; B. the leaves. Fig. 6 shows merely a handsomely arranged form of opposite leaves. Some examples of the various kinds of trunks we have given in our plate. Fig. 7, a SQUAMOSE stem; scaly, covered with imbricate scales. Fig. 8, a voluble stem; twining, ascending spirally, winding to the right or left. Fig. 9, a FRONS; a species of trunk composed of the branches and leaves blended together, are frequently united with the fructification, belong properly to the PALMS—and FELICES. Fig. 10, a SCAPUS, or stalk, a universal trunk raising the fructification, but not the leaves, as in NARCISSUS and PYROLA. Fig. 11, an ARTICULATE stem, jointed; when it is connected by various joints. Fig. 12, a DICHOMATOUS stem, forked; when the division is always in two parts. Fig. 13, a BRACHIATE stem, armed; when the branches are opposite and each pair is crossed by the pair next above or below it.

Nature is as careful to preserve the trunks of vegetables from excessive heat and cold as she is of animals. In cold climates these trunks are covered with a warm coat of moss which answers the purpose of fur to the bear, in preserving it from the

excessive frigidity of the atmosphere. While under the equatorial sun both kingdoms are, as a general rule, dressed in primeval simplicity ; and a little minute examination will show us that this rule holds even as it regards the free transmission of perspiration through the cuticle and other arrangements for the regulation of temperature.

Dirge of Flowers.

—
BY MRS. HEMANS.
—

BRING Flowers to the captive's lonely cell—
They have tales of the joyous woods to tell,
Of the free blue streams and the glowing sky,
And the bright world shut from his languid eye;
They will bear him a thought of the sunny hours,
And a dream of his youth—bring flowers, wild flowers.

Bring flowers, fresh flowers, for the bride to wear,
They were born to blush on her shining hair :
She is leaving the home of her childish mirth,
She has bid farewell to her father's hearth,
Her place is now by another's side ;—
Bring flowers for the locks of the fair young bride.

Bring flowers, pale flowers, o'er the bier to shed,—
A crown for the brow of the early dead.
For this through its leaves has the white Rose burst ;
For this in the woods was the Violet nurst :
Though they smile in vain for what once was ours,
They are love's last gift—bring flowers, pale flowers.

Bring flowers to the shrine where we kneel in prayer,—
They are nature's off'ring, their place is there :
They speak of hope to the fainting heart ;
With the voice of promise they come and part ;
They sleep in dust through the wintry hours ;
Then break forth in glory :—bring flowers, bright flowers.

Irritability.

BY PROFESSOR LINDLEY.

THE vitality of plants seems to depend upon the existence of an irritability which, although far inferior to that of animals, is nevertheless of an analogous character. This has been proved by a series of interesting experiments, by M. Marcet, of Geneva, upon the exact nature of action of mineral and vegetable poisons. The subject of his observations was the kidney bean; and in each experiment a contrast was formed between the plant operated upon and another watered with spring water. A vessel containing two or three bean plants, each with five or six leaves, was watered with two ounces of water containing twelve grains of the oxide of arsenic in solution. At the end of from twenty-four to thirty-six hours the plants had faded, the leaves drooped, and had even begun to turn yellow. Attempts were afterwards made to recover the plants, but without success. A branch of a rose tree was placed in a solution of arsenic, and in twenty-four hours ten grains of water and 1-12 of a grain of arsenic had been absorbed. The branch exhibited all the symptoms of unnatural decay. In six weeks a lilac tree was killed in consequence of fifteen or twenty grains of moistened oxide of arsenic having been introduced into a slit in one of the branches. Mercury, under the form of corrosive sublimate, was found to produce effects similar to those of arsenic; but no impression was made on a cherry tree by boring a hole in its stem and introducing a few globules of liquid mercury. Tin, copper, lead, muriate of barytes, a solution of sulphuric acid and a solution of potash, were found to be all equally destructive of vegetable life; but it was ascertained by means of sulphate of magnesia that those mineral substances which are innoxious to animals, are harmless to vegetables also. In the experiments with vegetable poisons, the bean plants were carefully taken from the earth and their roots immersed in the solutions used. It had been previously ascertained that plants so transplanted and placed in water, under ordinary circumstances, would remain in excellent health

for six or eight days, and continue to vegetate as if in the earth. A plant was put in a solution of *nux vomica* at nine in the morning; at ten o'clock the plant seemed unhealthy; at one the petals were all bent in the middle; and in the evening the plant was dead. Ten grains of an extract of *coccus suberosus*, dissolved in two ounces of water, destroyed a bean plant in twenty-four hours; prussic acid produced death in twelve hours; laurel water in six or seven hours; a solution of *belladonna* in four days; alcohol in twelve hours. From the whole of these experiments, M. Marcey concludes—1st, That metallic poisons act upon vegetables nearly as they do upon animals; they appear to be absorbed and carried into the different parts of a plant, altering and destroying the vessels by their corrosive powers. 2dly, That vegetable poisons, especially those which have been proved to destroy animals by their action on the nervous system, also cause the death of plants; whence he infers that there exists in the latter a system of organs which is affected by poisons nearly as the nervous system of animals. These facts have been confirmed by other experiments of M. Macaire. Irritability, in the common acceptation of the term in botany, means those extreme cases of excitability in which an organ exhibits movements altogether different from those we commonly meet with in plants. Of this kind there are three distinct classes, namely, those which depend upon atmospheric phenomena, spontaneous motions, and such as are caused by the touch of other bodies. Among the cases of irritability excited by particular states of the atmosphere, the singular phenomenon called by Linnaeus the sleep of plants, is the most remarkable. In plants with compound leaves, the leaflets fold together, while the petiole is recurved at the approach of night; and the leaflets again expand and raise themselves at the return of day. In others, the leaves converge over the flowers as if to shelter those more delicate organs from the chill air of night. The flowers of the crocus and similar plants expand beneath the bright beams of the sun, but close as soon as they are withdrawn. The *Œnotheræ* unfold their blossoms to the dews of evening, and wither away at the approach of day. Some *Silenes* roll up their petals in the day, and expand them at night. The florets of numerous compositæ and the petals of the genus *Mesembryanthemum*, are erect in the absence of the sun, but become reflexed when acted upon by his beams; and many

other such phenomena are familiar to every observer of nature. It is probable, indeed, that a different effect is produced upon all plants by day and night, although it is less visible in some than in others ; thus plants of corn, in which there is little indication of sleep when grown singly, exhibit that phenomenon very distinctly when observed in masses ; their leaves become flaccid and their ears droop at night. These effects have been generally attributed to the action of light ; and it is probable that that agent contributes powerfully to produce them ; for a flower removed from the shade will often expand beneath a lamp just as it will beneath the sun itself. De Candolle found that he could induce plants to acknowledge an artificial day and night by alternate exposure to the light of candles. There must, however, be some cause beyond the light, of the nature of which no opinion has yet been formed ; many flowers will close in the afternoon while the sun is still playing upon them, and the petals of others will fold up under a bright illumination. Spontaneous movements are far more uncommon than those which have just been described. In *Megaclinium Falcatum*, the labellum, which is connected very slightly with the columna, is almost continually in motion. In a species of *Pterostylis* shown me by Mr. Brown, I observed a kind of convulsive action of the labellums. The filaments of *oscillatorias* are continually writhing like worms in pain ; several other confervas exhibit spontaneous movements ; the most wonderful of all has already been described by Linnæus himself, in a former part, as the *Hedysarum Gyrans*. To this curious class ought, perhaps, to be referred the curious phenomenon known to exist in the fruit of the *Momordica Elaterium*, the squirting cucumber. In this plant the peduncle at a certain period, when the fruit has attained its perfect maturity, is expelled along with the seeds, and the mucus that surrounds them, with very considerable violence. Here, however, endosmoses (the circulation of the sap) appears to offer a satisfactory explanation. According to Dutrochet, the fluid of the placental matter in this fruit gradually acquires a greater density than that which surrounds it, and begins to empty the tissue of the pericarpium : as the fruit increases in size the same operation takes place, the pulpy matter in the centre is constantly augmenting in volume at the expense of the pericarpium ; but so long as the growth goes on, the addition of new tissue, or the distension of old, cor-

responds with the increase of volume in the centre. At last growth ceases, but the circulation still continues ; and then the tissue that lines the walls of the central cell is pressed upon forcibly by the pulp that it encloses, until this pressure becomes so violent that rupture must take place somewhere. The peduncle being articulated with the fruit, at length gives way, and is expelled with violence ; at the same time the cellules of tissue lining the cavity all simultaneously recover their form, the pressure upon them being removed, and instantly contract the space occupied by the mucous pulp ; the consequence of which is that it also is forced outwards at the same time as the peduncle. It has been found by measurement that the diameter of the central cavity is less after the bursting of the fruit than before. Movements produced by touch or external violence are very frequent. The sensitive plant, *Mimosa Pudica*, which will rapidly fold up its leaves as if in a state of sleep, is perhaps the most familiar instance, but many others also exist. Roth is recorded to have seen something of the same kind in the *Drosera Rotundifolia*. If the bottom of the stamens of the common berberry is touched on the inside with the point of a needle, they spring up against the pistillum. The valves of the *Impatiens* possess this property of bursting open, which is explained on the same principles as the squirting cucumber. M. Dutrochet, by throwing fresh valves of *Impatiens* into sugar and water, which gradually emptied the external tissue, and after at length rendering the valves straight, curved them backwards. The column of the genus *Stigledium*, which in its quiescent position is bent over on one side the corolla, if slightly irritated instantly springs with a jerk over to the opposite side of the flower. In *Kalmia* the anthers are retained in little niches of the corolla, and as soon as they are by any cause extricated, the filaments which had been bent back, recover themselves with a spring. In certain orchidous plants of the tribe called *Vandeæ*, the caudicula to which the pollen masses are attached, will often, upon the removal of the anthers, disengage themselves with a sudden jerk. At present we know scarcely anything of the causes of the diseases of the vegetable kingdom ; but it can scarcely be doubted that to ascertain what are the specific effects of deleterious matters upon the vital powers of plants, is to lay the foundation of an acquaintance with their pathology. Marce's experiments proved that

narcotic and irritating poisons produced an effect upon vegetables altogether analogous to that which they produce upon animals. The very valuable experiments with gases by Drs. Turner and Christison, lead to the same conclusion. The phenomena, when compared with that which was observed in the instances of sulphurous and hydrochlorous acid, would appear to establish, in relation to vegetable life, a distinction among the poisonous gases nearly equivalent to the difference existing between the effects of the irritant and the narcotic poisons on animals. The gases which rank as irritant, in relation to animals, seem to act locally on vegetables, destroying first the parts least plentifully supplied with moisture. The narcotic gases, including under that term those which act on the nervous system of animals, destroy vegetable life by attacking it throughout its whole system at once. The former probably act by abstracting the moisture of the leaves ; the latter, by some unknown influence on their vitality. The former seem to have upon vegetables none of that sympathetic influence upon general life which in animals follows so remarkably injuries inflicted by local irritants.

The Flower Garden.

THERE the Rose unveils
Her breast of beauty, and each delicate bud
Of the season comes in turn to bloom and perish.
But first of all the Violet, with an eye
Blue as the midnight heavens ; the frail Snowdrop,
Born of the breath of winter, and on his brow
Fixed like a pale and solitary star.
The languid Hyacinth, and pale Primrose
And Daisy, trodden down like modesty ;
The Foxglove, in whose drooping bells the bee
Makes her sweet music ; the Narcissus (named
From him who died for love), the tangled Woodbine,
Lilaes, and flowering Limes, and scented Thorns,
And some from the voluptuous June
Catch their perfumings.

Linnæus' Dial of Flowers.

BY MRS. HEMANS.

'TWAS a lovely thought to mark the hours,
As they floated in light away,
By the opening and the folding flowers,
That laugh to the summer's day.

Thus had each moment its own rich hue,
And its graceful cup and bell,
In whose colored vase might sleep the dew,
Like a pearl in an ocean shell.

To such sweet signs might the time have flowed
In a golden current on,
Ere from the garden, man's first abode,
The glorious guests were gone.

So might the days have been brightly told—
Those days of song and dreams,
When shepherds gathered their flocks of old,
By the blue Arcadian streams.

So in those isles of delight, that rest
Far off in a breezeless main,
Which many a bark, with a weary guest,
Has sought, but still in vain.

Yet is not life, in its real flight,
Marked thus—even thus—on earth,
By the closing of one hope's delight,
And another's gentle birth.

Oh! let us live, so that flower by flower,
Shutting in turn, may leave
A lingerer still for the sun-set hour,
A charm for the shaded eve.



CEREUS SPECIOSUS.

Showy Cactus.

Drawn expressly for L.K. Wellman.

The Cactus.

LINDLEY remarks that the Cactuses which, from the profusion of large richly colored flowers that some species are loaded with, have given to our conservatories an air of magnificence which was quite unknown till of late years, constitute the small group of Cactaceæ. The species are in all cases succulent, and with the single exception of the Pereskias, destitute of leaves, in whose room the stem is either green and leaf-like or at least covered over with a green integument, which has the structure of the pulpy part of a leaf, and like it executes the office of respiration. Belonging to this highly curious natural order is the INDIAN FIG—CACTUS OPUNTIA, which is found in every part of the United States, south of New York, and is quite common along the banks of the Hudson. The whole plant consists of roundish fig-shaped joints which grow profusely out of each other, covered at an early stage with small cylindric scattered leaves, and at length clothed with spines and well guarded by bristles. From these joints protrude the large pale yellow flowers made up of numerous petals, or blossoms, arranged in several series. Torch-thistles, a species of Cereus, whose angular trunks rise erect and singly into the air like fantastic vegetable columns, are another kind; as also the creeping Cereuses, with their long pendant branches which might be taken for the tails of some animals, if it were not for the gay rose-colored flowers they push out from time to time; and all the strange races of melon thistles, porcupine thistles, and hedge-hog thistles, whose names sufficiently attest their extraordinary appearance. From these a good idea can be formed of the Cactus tribe. All these species are destitute of true leaves, except when they are at first beginning to grow. Just at that time they do indeed produce little succulent bodies which we know to be rudiments of leaves; but such parts drop off soon after they are born, and the only representatives they leave behind are the stiff, hooked spines with which so many species are covered. The parts which are mistaken for

leaves in the Indian Fig, or some of the more common species of *Cereus*, are only the flattened joints of the stem. It would be difficult to find any race of plants where a more obvious connection exists between the manner in which they are constructed and the situation it is their destiny to live in. The greater number grow in hot, dry, rocky places, where they are exposed many months in the year to the fiercest beams of a tropical sun, without a possibility of obtaining from the parched and hardened soil more than the most scanty supply of necessary food. Under such circumstances, plants of an ordinary construction would perish; but Cactuses have a special power of resisting heat and drought, and, like the camel, they carry with them a supply of water for many not days, but months. It usually happens, that once a year during several weeks, at least, the air that surrounds them is saturated with moisture, and the soil they live in is drenched by ceaseless rains. At this time they grow fast; all the little cavities in their tissue, of which there are countless millions, are filled with liquid nourishment, and they may be literally said to gorge themselves with food. Then, when the rain ceases and the air dries up, and the spirit of the desert resumes his withering dominion over their climate, Cactuses are in the most robust health, and their cells are abundantly supplied with provision against scarcity. But these supplies would be quickly consumed by plants only protected by a thin cuticle and having their surface pierced by millions of breathing pores, all actively exhaling the evaporable matter that lies beneath them, and an early death would be the inevitable result. Such indeed is the lot of all the gay companions of the Cactus, which surrounded it during the season of feasting and prosperity, and to which Nature has given no special means of enduring the hardships to which their lot exposes them. A few days or weeks suffice to sweep their forms from the face of the creation; their leaves rapidly consume the stores deposited in their stems, their stems turn in vain to the roots for a renewed supply, for after but a little while the arid earth has nothing to part with, and then the leaves wither and fall off, the stems shrink up and crack with the dry heat, and the roots themselves in many cases follow the same fate. With Cactuses this is different; they have so tough and thick a hide that what liquid substances they contain can only pass through it in minute quantities; the breathing

pores on their surface are comparatively few, and so small as to act with extreme slowness when the air is dry; so that in proportion to the aridity of the air and the heat to which such plants are exposed, is their reluctance to part with the food they contain. They digest and re-digest it with extreme slowness, and may be truly said to live upon themselves during all those months when they cannot feed upon the soil or atmosphere. This statement applies more particularly to the species consisting of solid fleshing masses like the melon thistles, hedgehog thistles, and the like; but requires to be modified with reference to the thinner stemmed species, as *Cactus Speciosus*, *Speciosissimus* and *Truncatus*; of them it is equally true, but in a less degree. The property which the Cactuses thus possess, of living where few other plants can exist, sometimes renders them of great utility to man. On Mt. Etna, for instance, and its volcanic fields, it is the Indian Fig which the Sicilians employ to render such desolate regions susceptible of cultivation. This plant readily strikes into the fissures of the lava, and soon by extending the ramifications of its roots into every crevice of the stone, and bursting the largest blocks asunder by their gradual increase, makes it capable of being worked. We will come now to the botanical characters by which this interesting class of plants are known. It is in the class Icosandria or Calycandra, order Monogynia; the generic name is derived from the Greek *kaktus*, the ancient name for the prickly pear. Its characters are:—calyx superior, divided, imbricate; petals, inner ones larger than the outer, many; stigma many cleft; berry one-celled, many seeded, hollowed in the centre. The SHOWY CACTUS—*CEREUS SPECIOSUS*, is the one represented in our plate, though by no means the handsomest or largest of this glorious tribe. In the flower of this species you will seek in vain for a distinction between the calyx and corolla. It has a cylindrical stalk, the lower part of which is hollowed out for the ovary, and the upper portion covered with small scale-like rose-colored bracts, which gradually pass into large thin delicate leaves of the same color, unfolding tier upon tier within each other, and adhering by their lower ends, till a firm fleshy tube is produced. About the middle of this tube, just where it swells out and ceases to be cylindrical, spring forth a multitude of slender stamens, placed row upon row within the tube, and forming a long white filamentous cylinder or cone. The ovary

is a cavity in the bottom of the apparent stalk of the flower; it contains a great number of young seeds, attached to the lining of the cavity in eight rows, or *placentæ*, each hanging from the point of a long slender thread. The style rises like a graceful column from the top of the ovary, and after reaching a little beyond the limb of the anthers, divides into eight short narrow fringed arms, forming a beautiful star of eight rays. After a few days, or even hours, all this gorgeous panoply fades away, the stamens wither, the starry stigma closes its rays, and the style, no longer able to support it, curves downwards beneath its weight; the floral leaves droop, their colors become deadened, their firmness and elasticity are replaced by a soft and slimy ooze, and quickly afterwards the whole of this once lovely apparatus is thrown off by the ovary which enlarges, becomes pulpy, acquires a new color, matures its small brown seeds, and finally becomes a fruit so similar to that of a gooseberry, that for a long time the latter and the *Cactus* were thought to be related. Its seeds contain an embryo coiled up in the shell which accurately fits it, and having a long slender rootlet with two distinct seed leaves. This kind of structure, however, is not universal in the *Cactus* tribe. It sometimes happens that the embryo is straight, and almost destitute of seed leaves, their presence being only indicated by a little notch at the end, an interesting though unusual circumstance, showing that the habit of growing without leaves is not confined to the stem, but is to be met in some species even in the embryo itself. The similarity of the *Cactus* fruit to the gooseberry is not confined to the appearance alone but extends to the flavor, texture, and quality. So wholesome indeed is it, that it is an important object of cultivation in some countries. On Etna, for example, the large cooling fruits of the Indian fig are sold in considerable quantity, and some of the varieties are found to be of great excellence. In the West Indies and South America, *Cactus* fruit is often consumed as gooseberries.

We have seen this species form fences by the road-sides, for twenty miles in length, the spines and prickles making them impassable to any animals endowed with nerves. These prickles are used as needles; the inner bark makes a delicious and nutritive soup; and the wood is not only used by the negroes for fuel, but in the manufacture of torches, for which it is well adapted. We have seen a general illumination on the hills, arising

from the light of this kind of torch, when the negroes were hunting the Land Crab at night. Perhaps there are few plants more resplendently beautiful than the showy Cactus when covered, as it often is, with hundreds of its large rosy blossoms. But there are many species more magnificent in their individual flowers, as for instance, the NIGHT-BLOOMING CEREUS—*CEREUS GRANDIFLORUS*. This has a creeping, jointed, five-angled stem, which sometimes grows several yards in length in the hothouses. The flowers proceed from the side of the stem, with their large, trumpet-shaped tubes cut at the border into starry segments of the most dazzling white, the purity of which is increased by the tassel of pale yellow stamens that occupies, and also by the contrast of the beautiful flowers and the mis-shapen, dingy, snake-like leafless stems, from which they spring. They begin to open at about seven or eight o'clock in the evening, are full blown by eleven, and at four or five the next morning are quite withered. When expanded, it is more than a foot in diameter. The *CACTUS COCHINILLIFER*—COCHINEAL FIG, we have seen growing in its native regions to the height of four or five feet. It produces a fruit which is highly esteemed, on the top of which grows a red flower, which, when the fruit is ripe, falls down on the top of it, so that no rain or dew can wet the inside. A day or two after, the flower being scorched up by the heat of the sun, the fruit opens wide, and the inside appears full of red insects, which are caught and dried. We have seen the seeds of this plant whitened by the insects, which are often shaken off by changes of wind, and consequently killed. The Cactus is the emblem of HIDDEN MERIT. Mrs. Sigourney celebrates its praise in the following lines:

THE CACTUS.

Amid a thousand blooming flowers,
Where fragrance filled the tempered air,
A Cactus brought from tropic bowers,
Upreared its branches tall and bare.

Year after year it lived and grew,
The jest of many a brilliant flower,
Yet took no fairer form or hue
From burning sun or cooling shower.

O, bear it hence ! it is unmeet
 Beside this blushing Rose to stand,
 Who could refuse a voice so sweet,
 When uttering counsel or command ?

The Cactus, at the Maiden's will,
 Was from its envied place removed ;
 And soon the broken rank to fill,
 They brought a flower the maiden loved.

The exile plant from all its race
 Stood desolate like one accursed ;
 Yet noblest in unjust disgrace,
 At length to sudden bloom it burst.

O'er every branch a hundred flowers
 Their crimson glory gaily threw ;
 And odors fell from it in showers,
 Whene'er the vernal breezes blew.

I heard the maiden then exclaim,
 " Most gorgeous of the flowers of earth,
 Like love thou waitest want and shame
 To call thy beauties into birth.

" But then in dazzling bloom arrayed,
 Thy form the dreariest spot illumes,
 And all the close and sultry shade
 Grows balmy with thy sweet perfumes.

" O, teach me, wise and noble flower,
 To train my simple heart to meet
 Misfortune's dark and friendless hour,
 With smiles like thine serene and sweet !"

The Pimpernel.

THIS is a genus of the class Pentandria, order Monogynia. Its characters are :—corolla rotate ; caps opening horizontally. Specific characters :—leaves ovate ; stem procumbent. Phillips remarks, that this beautiful little plant, whose sensitive flowers form the peasant's barometer, is frequently called the Shepherd's



Scarlet Pimpernel *Anagallis Arvensis*.
China Aster *Aster Chinensis*.
Blue Hepatica *Hepatica Triloba*.
Joy *Hedera Helix*.

Drawn expressly for J. K. Hellyan.

Weather Glass, because the corollas never expand in rainy weather or when the air is moist; but on the contrary, when the atmosphere is dry and the sun shining, they display their scarlet and purple with happy effect, bespangling the earth with their bright eyes in the most agreeable manner, but which are regularly and firmly closed when Phœbus retires to the west. This is one of the wonderful instincts of inanimate nature; were it otherwise, the damps of the night air would prevent the discharge of the farina from the anthers, and this species of plants would be consequently lost to the link of nature's perfect chain; for although the Pimpernel is too lowly to excite the great interest of man, its seed is the food of insects, who have their office to perform towards the completion of the general harmony of the globe. The smaller kind of birds seek this seed with great avidity; and as it is a plant that follows cultivation, it may considerably save much of the seed of the husbandman from the ravages of the feathered tribe. Like the poppy, the Pimpernel is generally found in ploughed grounds and in gardens, particularly where the air is pure and the soil light and sandy. The COMMON PIMPERNEL—*ANAGALLIS ARVENSIS*, the one represented in our plate, continues to give out a succession of blossoms from the month of June to the end of September; and is, although a mere weed, deserving a situation on the parterre, its flowers being of a fine yellow scarlet, having a purple circle at the eye, which adds considerably to the beauty of this miniature flower. It is a native of England.

The BLUE-FLOWERED PIMPERNEL—*ANAGALLIS CŒRULEA*, is far less common than the scarlet. It grows abundantly in Switzerland, Germany and Sweden, and is often found in England. Its petals have a spot of carmine color at the base of each, in the same manner as the scarlet kind is marked by purple. Old writers, after the ancient authors, distinguish these two kinds of Anagallis by calling the blue flowered the female, and the red the male Imperial. Pliny remarks, that sheep avoid the blue Pimpernel, but eat of the scarlet, which he considers extraordinary, since the difference of the plants can only be perceived by the color of the flowers. He adds, that when a sheep by accident has eaten of the blue Pimpernel, the animal goes by instinct to a plant, which he calls *FERUS OCULUS*. Schreber says, that the sheep eat Pimpernel readily; by some experiments we find in

another place that kine and goats feed on it, but sheep refuse it. If Pliny is correct in his observations, both these opposite statements may also be accurate, since neither of them mention whether the experiments were made with the blue or scarlet kinds. Etymologists differ materially respecting the derivation of the name of this plant. De Martyn says it comes from the Greek, to laugh, because by curing the spleen it made persons cheerful. Coles thinks it was given from its growing abundantly by the river Gallus; but the most rational derivation seems to be from *anago*, to extract, or draw out, since we find the branches and leaves of the plant being pounded were used by the ancients not only to draw forth thorns and splinters, but it was also considered of sufficient efficacy to extract the points of arrows and spears that were broken in the flesh. The French call this plant Mouron, and our name of Pimpernel seems derived from *Primpernelle*, the French name for Burnet. In floral language, this little flower is made the symbol of assignation.

The Pimpernel is propagated by the curious in such matters, by sowing the seeds soon after they are ripe, on a border of light earth. The blue-flowered Pimpernel, naturally the one most desired, may be increased by cuttings; and when planted in a pot of light earth and placed in a hot-bed, will produce flowers in less than six weeks. This little plant, whose numerous branches spread themselves on the ground, being too weak to erect their flower stems, but which catch our attention by the vivid scarlet color of the corolla, was once in great repute by medical practitioners, but has now fallen entirely into disuse. It is in the natural order Primulaceæ.

THE PIMPERNEL.

Up and abroad—the earth puts on
 Her beautiful array,
 The heavens their glory, for the sun
 Rejoiceth on his way.
 Not vainly shall he shed his ray :
 Yon mountain's height I'll brave,
 Or turn my skiff so light and gay,
 And wake the slumbering wave.
 Hark ! how the fresh breeze bears along
 To heaven wide nature's matin song.

But what is here ? The Pimpernel,
Drooping with close-shut eye—
True sign, so village sages tell,
Of storm and tempest nigh—
But sure such bright and glorious sky,
Shall know no cloud to-day,
O then thy darkling prophecy
Give to the winds away,
And own, whilst thou yon heavens dost view,
For once thou hast not read them true.

Despite my taunt the precious flower
Still closed its petals bright,
And soon the storm, with voice of power
Show'd its forebodings bright.
'Tis ever thus—some sudden blight,
When most we dream of joy,
Does on the shining prospect light
To mar it and destroy.
Oh ! when like this poor flower shall I
Discern aright life's changing sky ?

MORAL OF FLOWERS.

The China Aster.

THIS is a genus of the class Syngenesia, order Polygamia Superflua. Its characters are :—calyx imbricate, inferior scales commonly spreading; egret simple, pilose ; receptacle generally deep pitted. Specific characters : leaves ovate, coarsely toothed, stalked, the caudine leaves sessile, cunnate at the base ; stem hispid ; branches in simple heads. The numerous family of radiated flowers were named Aster from the Greek term for Star. The French call this autumnal flower REINE MARGUERITE. Queen Daisy, and not Queen Margaret, as it is generally translated, *Marguerite* being their name for star-like Daisy. The Chinese generic term for this flower is KEANGNAMFA. The European parterres are indebted to the missionary Father d' Incarville, for the gay robe which this various colored flower throws over them during the latter months of Flora's reign—he having sent the seeds from China to the Royal Garden of Paris, where the plants produced only simple flowers of one uniform color,

but which, through cultivation and change of soil, soon became both so doubled in petals and various in colors, that it now forms one of the principal ornaments of the flower garden from July to November. Mr. Miller tells us that he first received the seeds from Paris, in 1731, from which he raised some plants with red, and others with white flowers. In the year 1736, he procured the seeds of the blue variety, but these were all single flowers. In 1752 he received seeds of the double flowers, both red and blue, and in the following year he got some of the double white sort, since which time the varieties have been infinitely increased by means of some kinds being impregnated with farina of others, and thus we are presented with party-colored flowers of red and white, blue and white, purple and white, pink and purple, two reds, two blues, and all the changes which these colors are capable of producing—on which account the China Aster is made the emblem of VARIETY. The Chinese display a taste in their arrangement of these star-formed flowers that leaves all the florists in the shade. Even our most curious amateurs, says Phillips, have yet to learn what effect these plants produce by their gay corollas when carefully distributed by the hand of taste. Let the imagination picture a bank sloping to a piece of water, covered with these gay flowers, so disposed that they rival the richest patterns of the carpets of Persia, or the most curious figures that the artist in filagree can devise—see these reflected in the mirror below, and some idea of the enchanting appearance which these brilliant stars are thus made to produce in the gardens of China may be conceived. When the seed of the China Aster cannot be depended on as to what colored flower it may produce, the plants should be kept in a nursery bed until the first flower is expanded sufficiently to ascertain its hue; and then, with a transplanting spade, they may be removed to such parts of the parterre as we wish to embellish by any particular hue, or to the sites where we intend to display the art of grouping colors. These plants should be allowed sufficient room to extend their branches, but at the same time be planted so near to each other as to hide the earth, and form but one mass of flowers, and they may generally be planted on

The spot where Spring its earliest visit paid,
for by the time these annuals require transplanting, most of the

early flowering bulbs will have been taken out of the ground. It is recommended to preserve the seeds from the centre or principal stem only, as the flowers on the lateral branches are never so large or so double, and consequently produce inferior plants. This seed should be sown in the spring, on a warm border or a gentle hot-bed, and when the plants are about three inches high, they should be removed to a bed of rich earth, where they may be transplanted at six inches distance from each other every way, and kept shaded from the sun and properly watered until they have taken root. In about five weeks they may be again removed to the parterre, where they are to flower; but in this last removal it is necessary to take them up with a good ball of earth at their roots, and it should be performed in rainy weather, which will prevent their being checked by transplanting. The French gardeners remove them with a transplanter, such as they remove tulips with. The Chinese frequently keep them in pots until they begin to flower, and by this means are able to place them out so as to form an elegant distribution of these floral stars. We would particularly recommend an abundance to be placed in the shrubbery, since no flower forms so good a contrast to the autumnal tints of trees and shrubs as these emblems of variety. The young botanist will observe by comparing this flower with the *Helianthus*, that it agrees in having the florets of the disk bisexual, but differs in those of the radius or margin, which are furnished with a stigma only, but which are made fertile by the pollen of the centre florets, and hence its place in the order. The marginal florets are usually ligulate, but we have lately had a beautiful variety introduced, consisting entirely of quilled florets. There are in the United States, according to Nuttall, upwards of more than sixty species belonging to this genus, which profusely decorate, with their copious flowers, our autumnal scenery. They are large sized plants, and flourish wherever the soil is good, and often in the shade of bushes and trees. One of the most extraordinary is a New Holland shrub, which will every now and then emit an odor of musk, without being touched.

“ Far in a sheltered nook
I’ve met, in these calm days, a smiling flower,
A lonely Aster, trembling by a brook,
At the quiet noon tide’s hour ;

And something told my mind,
That should old age to childhood call me back,
Some sunny days and flowers I still might find
Along life's weary track."

J. H. BRYANT.

"On the hill the golden-rod,
And the Aster in the wood,
And the yellow sunflower by the brook,
In autumn beauty stood,
Till fell the frost from the clear cold heaven,
As falls the plague on men ;
And the brightness of their smile was gone
From upland, glade, and glen."

W. C. BRYANT.

The Blue Hepatica.

THIS plant is in the class Polyandria, order Polygynia. Its generic characters are :—calyx three-leaved, some distance below the corol, entire; petals six to nine; seeds without tails. This charming little plant, which the florist has brought from the woods and shady mountains of Italy, Germany and Sweden, to embellish the English parterres, and from thence our own, offers its blossoms, with those of the Snowdrop, to form our earliest garland. As no flower garden ought to be without this hardy specimen of Anemone, and few possess it so plentifully as to show it to full advantage, we shall strongly recommend the careful increase of this flower of February and March. It loves a strong, loamy soil, and an eastern aspect, but will flourish in almost any earth and situation where it can receive a pure air. The Hepatica should be planted in clumps of at least a dozen plants each, about six inches apart, and these should never be taken up or transplanted, except to form fresh clumps, as they frequently die after being removed, and never flower well until about the third year after they are planted. The double varieties are increased by parting the roots when in blossom, which is contrary to the general mode of planting flowers. March is therefore the best time for forming clumps of these plants, which, like their relatives, seem to delight in the wind.

And coy Anemone, that ne'er uncloses
Her lips, until they're blown on by the wind.

We have found these flowers to have the most agreeable effect, when the different varieties have been kept in distinct clumps, the single Blue Hepatica being divided by other early flowers from the red or white varieties; and as the double Hepaticas blossom about a fortnight later, they should never be mixed with the single sorts, but in some situations they may form a mass intermingled with the yellow hellebore or the white snowdrop, giving the shrubbery the appearance of being

—Fringed in nature's native taste,
The hillocks dropped in nature's careless haste.

BURNS.

The name of Hepatica for this plant is from the Greek, *hepatikos*, which signifies belonging to the liver, as the form of the leaf is supposed to resemble that organ. It was formerly called Trinity Herb. We conclude this name was given on account of its leaf, which has the appearance of three leaves united into one; hence its specific name, *Triloba*. The single Hepatica was cultivated in the English gardens previous to the time of Gerard, who also notices the double varieties, but states that they are strangers to England. They were first sent from Italy by Pontius, who found them growing with double flowers in Austria. When flowers become double in their natural state, which is but rarely the case, it is owing to some accidental circumstance analogous to cultivation—such as keeping the seed out of the earth beyond its due time, or its falling in situations where it has not the power of perfecting its blossoms; for a flower becomes more imperfect as it is more doubled, the stamens often becoming wholly converted into petals, as in the double Hepatica, which is therefore not able to produce seed, and necessarily requires the hand of cultivation to prevent them from becoming extinct. The single Hepaticas produce seeds every year, and by sowing them, new varieties may be obtained as in other plants. The time recommended for sowing the seed is in the beginning of August. They should be sown in pots or boxes filled with light earth; these should be placed so as to receive the morning sun only, until October, when they may be removed into a more general sunny situation. About the month of March, one of the earliest

visitants of the spring, flowering in sunny spots, often before the snow has left the ground, on hairy stalks will be seen this variety of the Anemone; for Hepaticas, as Lindley observes, which you have so often seen thriving, when neglected, in a cottage garden, when they perished under your own continual care, as if they were created especially for the pleasure of the poor, are nothing but Anemones, the changed body of Adonis, when he was killed by a wild boar he had wounded in the chase. It is the emblem of CONFIDENCE. This plant possesses mildly astringent virtues, and has either been given in the form of tea, or half a teaspoonful of the dried leaves at a time. We possess, however, so many better remedies, that this has gone out of date entirely, and is seldom used; the quack preparations under this name containing not a particle of it.

The Ivy.

THE generic term is derived from *hæreo*, to stick, because it attaches itself to trees and old walls. It is in the class Pentandria, order Monogynia. The characters are:—petals five, oblong; berry five-seeded, surrounded by the calyx. Specific character:—leaves ovate, undivided. *HEDERIA HELIX*—Ivy, is an ornamental evergreen climber, with a woody stem, common in British woods on old walls and ruins. It flowers in erect umbels.

I love the Ivy mantled tower,
Rocked by the storms of thousand years.

CUNNINGHAM.

Oh how could Fancy crown with thee,
In ancient days, the god of wine,
And bid thee at the banquet be
Companion of the vine?

Thy home, wild plant, is where each sound
Of revelry hath long been o'er,
Where songs' full notes once pealed around,
But now are heard no more.

An English writer remarks, that we may indeed wonder that

the Ivy should be consecrated to such unhallowed purposes. Besides the consideration of its usual haunts, there is something so sombre in its appearance as makes it seem but little akin to revelry. One might almost imagine that in wreathing the goblet with its graceful branches, garnished with bright but poisonous berries, it was designed to point a moral by alluding to the sweet poison of misused wine. We are indebted to the Ivy for the picturesque beauty it throws around every object to which it attaches itself; no architectural ornaments, however classical, no tracery, however light and elegant, can vie in effect with this wild tapestry. But not only is the eye indebted to it, the imagination also shares in the obligation for the touching imagery it supplies. Springing wherever there is ruin and decay, it decks indiscriminately the loftiest height and the humblest grove, and that with such exquisite grace that we doubt whether Adam, to whom his fair consort assigned the task of directing the clasping Ivy where to climb, could have twined it more tastefully. Aimé Martin says, that faithful love secures with a branch of Ivy the quickly fading roses which adorn the brows. Friendship has chosen for its device an Ivy which clothes a fallen tree with the motto: RIEN NE PEUT M'EN DÉTACHER. In Greece, the altar of Hymen was surrounded with Ivy, a sprig of which was presented by the priest to a new married spouse, as the symbol of an indissoluble knot. Ingratitude has sometimes been represented by Ivy, as when it attaches itself to a young tree, it confines the stem, and consequently prevents the free circulation of the sap. The author of a French work has repelled this calumny. To him the Ivy appears to be the emblem of eternal friendship.

The Ivy shuns the city wall
Where busy clamorous crowds intrude,
And climbs the desolated hall
In silent solitude.
The time-worn arch, the fallen dome,
Are roots for its eternal home.

Carrington makes it the symbol of desolation, but we love it best as the emblem of FRIENDSHIP. It is a popular error that it belongs to the class of parasitical plants, deriving its support from the tree which it environs, when in fact it is sustained by its own vital powers; its roots are fixed in the earth, and the sap

is conveyed into its branches by the same laws which regulate the vital functions of other members of the vegetable kingdom. The leaves have but little smell, though a strong nauseous taste · they are much used in Germany, Haller informs us, as a remedy for consumption in children. In England they are used more as applied to running sores to keep issues open. They had some reputation in the cholera, but are entirely unused at the present day.

This has often been confounded with the POISON IVY—*RHUS RADICANS*, and the general aversion with which the latter has been regarded fully extended to the former. The character of the Poison Ivy is so well known that it is universally distinguished by some name applicable to its deleterious properties, as POISON VINE, POISON CREEPER, and POISON IVY. It is commonly found in a dry soil, on the borders of fields and woods, and in its mode of growth very like the common creeper; and like other handsome ornamental twiners, would be, like its European namesake, carefully cultivated and cherished, were it as harmless. It rises and supports itself by means of strong fibres, which come out from the sides, and adhere to everything with which they come in contact. These fibres, though very slender, and apparently weak, are extremely strong ; their size enables them to penetrate minute crevices, to which in consequence they must ever afterwards cling, and like Milo and the oak, often prove their ruin, in not allowing them to get out of the way. Dr. Bigelow says that he has repeatedly seen large stems of the *Rhus Radicans* completely buried in the trunks of old trees, the bark having grown over and enveloped them. The stem is commonly not more than an inch in diameter ; but in old plants it obtains several times the size ; compressed of course in all cases on the side to which it adheres for support. Linnæus placed this genus in the class Pentandria, order Trigynia ; most of the species thus included are Dicoccious. The leaves are in threes and supported on long, partly flattened footstalks ; they are of an ovate shape, sharp, smooth and glossy on both sides, somewhat hairy on the prominent veins beneath ; margin sometimes whole and sometimes toothed. The flowers, which come out in June, are small and greenish white, growing in clusters on the seeds of the new shoots, and springing out mostly from the angle formed by the leaf and stem. The berries are somewhat round in shape, and,

like the flowers, of a greenish white color. The RHUS TOXICO-DENDRON and this are merely varieties of the same species. The wood of the Poison Ivy is easily broken, finely grained and white; in the old plants, yellowish in the centre. The juice of the plant, when first exposed to the air, is of a rich cream color, but shortly afterwards, in the space of from fifteen to twenty minutes, changes to a deep black, useful as forming a perfect indelible ink. The color, when it is first stained with it, is hardly perceptible, but continues to grow darker, and will last as long as the fibres of the linen remain connected with each other. Many experiments have satisfactorily demonstrated the value of this fluid; but it is rather difficult to procure, as the touch and effluvium of the plant will cause in most cases a train of distressing symptoms, even attended with fatal results. A case is related of a gentleman who became sick by marking his wristband with some of the juice to observe the effect. The disease brought on by it seems to be of an erysipelatous character, and is treated by rest, opium, low diet, and evacuations. It is the emblem of MALIGNITY.

THE IVY.

Have you e'er seen the moon's soft splendor
Sleep peaceful on some ruined pile,
Gilding with radiance mild and tender,
Each broken arch and mouldering aisle ?

Have you e'er seen the ivy clinging,
Round fragments broken and decayed,
As if its mantling wreaths 'twere flinging,
To hide the breaches time had made ?

Oh ! thus should care or sorrow wound thee,
Be Friendship's soft endearments thine,
And fondest sympathy around thee
As close her thousand tendrils twine.

And when, at last, each youthful token
Shall yield to wasting and decay,
And thou, like arch or column broken,
Shalt feel proud manhood's strength give way.

Oh ! then may love by time unshaken,
Around its earliest prop still cling
(For when was mouldering arch forsaken
By the fond wreath it caused to spring ?)

Still may one smile, as moonbeam tender,
E'en to the last unwearied shine,
Gilding thy manhood's waning splendor,
And oh! may that one smile be thine?

MORAL OF FLOWERS.

The Agrimony.

THIS is a genus of the class Dodecandria, order Digynia. The name is derived from two Greek words meaning a field and alone, as it was considered the chief of all wild herbs. Its characters are:—calyx five-cleft, female with another; petals five; seeds two at the bottom of the calyx. Specific characters:—stem-leaves pinnate, the end lobe petioled; Fruit hispid. The *AGRIMONIA EUPATORIA*—AGRIMONY, rises to the height of about two feet, with an angular hairy stem, which is simple or undivided and herbaceous. It is a native of the fields of Europe, and was early introduced into this country, where it has become naturalized, and so common that it is found almost everywhere by fences and thickets. The leaves, which are on the lower part of the stem, come directly out from it without the intervention of footstalks, which the terminal ones have; they are uninterruptedly pinnate; of an oval form, and cut on the margins with minute teeth. The scales at the base of the leaf-stalks, which differ in some degree from common leaves, are large, semicircular, and cut serrate. The flower spikes are elevated, rather thinly scattered, and in the months of June and July bear a somewhat bell-shaped, pretty yellow flower. It has a permanent flower-cup, which is armed with hooked bristles. The whole height of the plant is from twenty-four to thirty-two inches. After flowering, it perfects two hard-coated seeds in the bottom of the calyx. The plant is perennial. In floral language, it emblemizes THANKFULNESS. This plant, in domestic practice, is often very useful, as it possesses mildly astringent properties. Chomel relates two cases in his successful treatment of enlarged and indurated livers by its use; and it has often been found advantageous in weak hemorrhagic affections. In cutaneous diseases, particularly in scabies, we have been told it manifests great efficacy, for which



AGRIMONIA EUPATORIA.

Drawn expressly for J. C. Wellman.

purposes it is given with liquorice, in the form of a tea; though Allston remarks it should always be exhibited in the state of powder. It is best used while fresh; and the tops, before the flowers are formed, possess the most virtue. Cullen gives it feebly astringent powers, and passes it by with little other remarks.

Vegetable Tissue.

LINDLEY observes that if plants are considered with reference to their internal organization, they appear at first sight to consist of a vast multitude of exceedingly minute cavities separated by a membranous substance. More exactly examined, it is found that these cavities have a variety of different figures, and that each is closed up from those that surround it; and if the inquiry is carried still farther, it will be discovered that the partitions between the cavities are all double, and that by maceration in water and other processes, the cavities, with their enclosing membranes, may be separated from each other into distinct bodies. These constitute what is called VEGETABLE TISSUE, or ELEMENTARY ORGANS. Their chemical basis has been found to be oxygen, hydrogen, and carbon, with occasionally a little nitrogen, combined in various proportions. Their organic basis is MEMBRANE and FIBRE. Membrane varies in degree of transparency, being occasionally so exceedingly thin as to be scarcely discoverable, except by the little particles that stick to it, or by its refraction of light; and sometimes having a perceptible green color, and a thickness which is considerable, if compared with the diameter of the cavity it encloses. Fibre may be compared to hair of inconceivable fineness, in diameter not often exceeding the $\frac{1}{200}$ of an inch; it has often a greenish color, but it is more frequently without any, and transparent. The forms under which the elementary organs are seen, are CELLULAR TISSUE, WOODY FIBRE, and VASCULAR TISSUE.

Cellular tissue generally consists of little bladders or vesicles of various figures, adhering together in masses. Occasionally it is composed of fibre only, unconnected with membrane. It is transparent, and in all cases colorless; when it appears other-

wise, its color is always caused by matter contained within it. If a thin slice of elder be examined with a microscope, it will be found to have a sort of honeycomb appearance, fig. 1, as if there were a number of hexagonal cavities separated by partitions. These are destitute of all perforations or visible pores, so that each, as far as can be seen, is completely closed up from its neighbor; although, as they have the power of filtering fluids with rapidity, it is certain they must abound in invisible pores, and that they are not impermeable, as if they were made of glass. Different opinions, however, are entertained upon this subject, and we have caused the supposed communicating pores or slits to be drawn in the cells on the plate, as delineated by those who think they have observed them. It may be observed that cellules often contain air bubbles, which appear to have no direct means of escape, and that the limits of color are often very accurately defined in petals, as for instance in the stripes of tulips and carnations, which could not be the case if cellular tissue were perforated by such holes as have been described, for then all colors would necessarily run together. The brilliant colors of vegetable matter, the white, blue, yellow, scarlet, and other hues of the corolla, and the green of the bark and leaves, is not owing to any difference in the color of the cellules, but to coloring matter of different kinds which they contain. In the stem of the *Impatiens Balsamina*, a single cell is frequently red in the midst of others that are colorless. Examine the red cellule, and you will find it filled with a coloring matter of which the rest are destitute. The bright satiny appearance of many richly colored flowers depends upon the colorless quality of the tissue. Thus, in *Thysanotus Fascicularis*, the flowers of which are of a deep brilliant violet, with a remarkable satiny lustre, that appearance will be found to arise from each particular cellule containing a single drop of colored fluid which gleams through the white shining membrane of the cellules, and produces the flickering lustre that is perceived. The coloring matter is frequently fluid, but is in the leaves and other parts more frequently composed of granules of various sizes; this is particularly the case in all green parts, in which the granules lie amongst greenish liquid, which, as they grow older, dries up, whilst the granules themselves gradually change to olive green, and finally to brown. The cellules develop in some cases with great rapidity. The *Supinus Polyphillis*

has been seen to grow in length at the rate of an inch and a half a day. The leaf of the *Urania Speciosa* has been found, by Mulder, to lengthen at the rate of from one and a half to three and a half lines per hour, and even as much as from four to five inches per day. This may be computed to equal the development of at least four or five thousand cellules per hour. But the most remarkable instances of this sort are to be found in the Mushroom tribe, which in all cases develope with surprising rapidity. It is stated by Junghuns, that he has known the *Borista Gigantium*, in damp, warm weather, grow in a single night from the size of a mere point to that of a huge gourd ; supposing it, at a moderate estimate, to have grown in the course of twelve hours, its cellules must have developed at the rate of near 4,000,000,000 per hour, or more than thirty-six millions per minute.

Woody fibre consists of very slender, transparent, membranous tubes, tapering acutely at each end, lying in bundles, and, like the cellular tissue, having no direct communication with each other, except by invisible pores. It may at all times be known by its elongated figure and extremely attenuated character ; usually it has no sort of markings on its surface, except occasionally a particle or two of greenish matter in its inside ; sometimes, however, it is covered with spots that have been mistaken for pores, and that give it a peculiar character. Generally while cellular tissue is brittle and has little or no cohesion, woody fibre has great tenacity and strength, whence its capability of being manufactured into linen. Everything prepared of flax, hemp, and the like, is composed of woody fibre ; of this there are three distinct kinds : 1st. That in which the walls are not occupied with granules or glands sticking to them, or in which the former are of very rare occurrence. This is the finest and commonest of all ; and is also the most genuine state of woody fibre. 2d. Those in which the walls have uniformly a considerable number of granules of regular size, sticking to them in a scattered manner. 3d. The glandular, which has hitherto only been noticed in the Conifera, in which it is uniformly found in every species ; its dimensions are more considerable than either of the two last mentioned forms. Woody fibre constitutes a considerable proportion of the ligneous part of all plants ; it is common in bark, and forms the principal portions of the veins of leaves, to which it gives stiffness and tenacity.

Vascular tissue consists of simple membranous tubes, tapering to each end, but often ending abruptly, either having a fibre generated spirally in their inside, or having their walls marked by dots or transverse bars arranged in a spiral direction. We will describe the two principal kinds of vascular tissue, the SPIRAL VESSELS, and DUCTS. The former are membranous tubes with conical extremities, their inside being occupied by a fibre twisting spirally, and capable of unrolling with elasticity. To the eye, when at rest, they look like wire twisted round a cylinder that is afterwards removed. For the purpose of finding them for examination, the stalk of a strawberry leaf, or a young shoot of the *Cornus Alba* may be conveniently used; in these they may be readily detected by pulling the specimen asunder, when they unroll, and appear to the naked eye like a fine cobweb. Fig. 2, A spiral vessel; fig. 3, the same magnified, showing the elevated, and perhaps glandular border, the thread of which is sometimes double or compounded of others. In size, like all other kinds of tissue, they are variable, but generally very small in the petals and filaments. An irritability of a curious kind has been noticed in their fibres. Malpighi tells us that in herbaceous plants and some trees, especially in the winter, a beautiful sight may be observed by tearing gently asunder a portion of a branch or stem still green, so as to separate the coils of the spires, and the fibre will be found to have a downward worm-like motion, which lasts for a considerable time. These vessels are situated in that part of the axis of the stem surrounding the pith, and called the medullary sheath, and also in every part of the tissue which originates from it, such as the veins of leaves, and petals, and all other modifications of leaves. In the stem of one class of plants, spiral vessels occur in the bundles of woody tissue that lie among the cellular substance; in the leaves of some plants they are found in such abundance as to be collected in handfuls in some islands of the West Indies, for special purposes. We are also told that about a drachm and a half is yielded by every plantain, and the fibres may be either employed in the manufacture of a sort of down, or spun into thread. Ducts are membranous tubes, with conical or rounded extremities, their sides being marked with transverse lines or rings or bars, or dots arranged spirally, and being incapable of unrolling. In some states, these approach so nearly to the spiral

vessel that it is impossible to doubt their being a mere modification of it, and in others the analogy cannot be traced. Fig. 4, Vascular tissue always consists of tribes that are imbranched. The kinds of tissue now enumerated are all that have yet been discovered in the fabric of a vegetable. There are, however, several other internal parts, although not elementary, being themselves made up of those we have just described; such are the Air Cells, Receptacles of Secretion Glands, &c.

Agriculture.

TYAS remarks that corn, that is the principal grain of every country, is nowhere to be found in its primitive state. It seems to have been confided by Providence to the care of man, with the use of fire, to secure him the sceptre of the earth. With corn and fire, all other gifts may be dispensed with or acquired. With corn alone we could nourish every domestic animal which affords flesh for our sustenance, shares our labors, or which may be in various ways serviceable to us. The pig, the hen, the duck, the pigeon, the ass, the sheep, the goat, the horse, the cow, the cat, the dog; each renders us something in return for our care. We receive from each, according to nature, either eggs or milk, bacon or wool, various meats, or services. Corn is the first bond of society, because its culture and preparation for our use require great labor and reciprocal services. From its inestimable value, the ancients called the goddess Ceres the *Legislatrix*.

There are occasions when food is much more highly esteemed than the possession of riches. An Arab, wandering in the desert, had not tasted food for the space of two days, and began to be apprehensive of famine. In passing near a well where the caravans stopped, he perceived a little leathern sack on the sand. He took it up, saying, "God be praised, it is, I think, a little flour." He hastened to open the sack, but at the sight of its contents, he cried, "How unfortunate I am! it is only some gold powder!"

Howitt says, the harvest is a time for universal gladness of the heart. Nature has completed her most important operations.

She has ripened her best fruits, and a thousand hands are ready to reap them with joy. It is a gladdening sight to stand upon some eminence, and behold the yellow hues of harvest amid the dark relief of hedges and trees; to see the shocks standing thickly in a land of peace; the partly reaped fields and the clear cloudless sky shedding over all its lustre. There is a solemn splendor, a mellowness and maturity of beauty, thrown over the landscape. The wheat crops shine on the hills and slopes, as Wordsworth expresses it, "like golden shields cast down from the sun." For the lovers of solitary rambles, for all who desire to feel the pleasures of a thankful heart, and to participate in the happiness of the simple and the lowly, now is the time to stroll abroad. They will find beauty and enjoyment spread abundantly before them. They will find the mowers sweeping down the crops of pale barley, every spiked ear of which, so lately looking up bravely at the sun, is now bent down in a modest and graceful curve, as if abashed at his ardent and incessant gaze. They will find them cutting down the rustling oats, each followed by an attendant rustic who gathers the swath into sheaves from the tender green of the young clover, which, commonly sown with oats to constitute the future crop, is now showing itself luxuriantly. But it is in the wheat field that all the jollity, and gladness, and picturesqueness of harvest are concentrated. Wheat is more particularly the food of man. Barley affords him a wholesome but much abused potion; the oat is welcome to the homely board of the hardy mountaineers, but wheat is especially and everywhere "the staff of life." To reap and gather it in every creature of the hamlet is assembled. The farmer is in the field, like a rural king among his people:

Around him ply the reaper band,
With lightsome heart and eager hand;
And mirth and music cheer the toil,
While sheaves that stud the russet soil,
And sickles gleaming in the sun,
Tell jocund autumn is begun.

The laborer, old or young, is there to collect what he has sown with toil, and watched in its growth with pride; the dame has left her wheel and her shady cottage, and, with sleeve-defended arms, scorns to do less than the best of them; the blooming

damsel is there adding her sunny beauty to that of universal nature; the boy cuts down the stalks which overtop his head; children glean amongst the shocks; and even the unwalkable infant sits propped with sheaves and plays with the stubble, and

With all its twined flowers.

Such groups are often seen in the wheat-field as deserve the immortality of the pencil. There is something, too, about wheat-harvest, which carries back the mind and feasts it with the pleasures of antiquity. The sickle is almost the only implement which has descended from the olden times in its pristine simplicity to the present hour, neither altering its form, nor becoming obsolete, amid all the fashions and improvements of the world. It is the same now as it was in those scenes of rural beauty which the Scripture history, without any labored description, often by a single stroke, presents so vividly to the imagination, as it was when tender thoughts passed

Through the sad heart of Ruth, when sick for home,
She stood in tears amid the alien corn;

when the minstrel-king wandered through the solitudes of Paran, or fields reposing at the foot of Carmel, or, "as it fell on a day, that the child of the good Shunamite went out to his father to the reapers. And he said unto his father, My head, my head! And he said to a lad, Carry him to his mother. And when he had taken him, and brought him to his mother, he sat on her knees till noon, and then died." 2 Kings iv. 18—20.

Let no one say it is not a season of happiness to the toiling peasantry; I know that it is. In the days of boyhood I have partaken their harvest labors, and listened to the overflowing of their hearts, as they sate amid the sheaves beneath the fine blue sky, or among the rich herbage of some green headland beneath the shade of a tree, while the cool keg plentifully replenished the horn; and sweet, after exertion, were the contents of the harvest field basket. I know that the poor harvesters are among the most thankful contemplators of the bounty of Providence, though so little of it falls to their share. To them harvest comes as an annual festival. To their healthful frames, the heat of the open fields, which would oppress the languid and relaxed, is but an exhilarating glow. The inspiration of the clear blue sky above,

and of scenes of plenty around them, and the very circumstance of their being drawn away from their several dwellings at this bright season, open their hearts and give a life to their memories ; and many an anecdote and history from “ the simple annals of the poor, are there related, which need only to pass through the mind of a Wordsworth or a Crabbe, to become immortal in their mirth or woe.”

The custom of breaking a straw to express that treaties may be broken, may be traced to the first days of monarchy ; it may be said to be one of royal origin. The old chronicles relate that in 922, Charles the Simple, seeing himself abandoned by the principal lords of his court, had the imprudence to convoke an assembly at Soissons. He sought his friends there, but found only a factious crew whose audacity was increased by his weakness. Some reproached him with indolence, with his prodigalities, and the blind confidence he reposed in his minister Haganon ; others were angry for the dishonor of his concessions to Raoul the Norman chief. Surrounded by their foul sedition, he prayed, promised, and thought to escape by the display of new weaknesses, but in vain. When they saw him without moral courage, their audacity knew no bounds ; and they even declared he ceased to be their king. At these words, which they pronounced with every sign of violence, accompanied by menaces, they advanced to the foot of the throne, broke some straws which they held in their hands, threw them roughly on the ground, and retired, after expressing, by this action, that they broke treaty with him. This example is the most ancient of its kind that we know ; but it proves for a long time this mode of breaking an oath had been in use, since the vassals did not think it necessary to add a single word of explanation, as they felt sure of being understood.—**AIMÉ MARTIN.**

Remarks on Flower Gardens.

BY HENRY PHILIPS, F.R.S.

THE luxury of having flower gardens attached to our dwellings originated with Epicurus, who first gave the idea to the Athenians about two hundred and sixty years before the birth of Christ. Plautus assigned the custody of gardens to Venus; and Pliny observes, that the labors of the garden formed one of the occupations of females in his time; and that it was a common observation in those days, when a garden was out of order, and not well kept, that the mistress was a bad housewife. Horticultural pursuits were deemed so honorable amongst the Romans that many of their distinguished families derived their surnames from some species of fruit or vegetable which they were celebrated for cultivating. In modern days we have reversed this order, and bestowed the names of our eminent botanists, or persons who have zealously occupied themselves with the cultivation and introduction of new plants, on the plants themselves. Thus, with the unanimous consent of all Europe, the *Banksia*, a genus of plants procured from New Holland, will carry down the name of Banks to the end of time, as Aitonaria will that of the worthy author of the *Hortus Kewensis*. Indeed, were we to enumerate all the plants that have been so named in gratitude, or through respect to such persons, it would form one of the most interesting nomenclatures that has ever appeared.

The fondness for plants is natural to all men who possess the least sensibility (albeit Rev. Thomas A. Weed thinks differently); and however their attention may be engaged by other pursuits, it generally happens that this predilection shows itself during some period of their lives. Nature seems to have designed men for the culture of her works, and to have ordained that we should be born gardeners, since our earliest inclination tends to the culture of flowers. The infant can no sooner walk, than its first employment is to plant a flower in the earth, removing it ten times an hour to wherever the sun seems to shine most favorably. The schoolboy, in the anxious care of his little ground, lessens

the thought of the home he has left. In manhood, our attention is generally engaged by more active and imperious duties, but as age obliges us to retire from public business, the love of gardening returns to soothe our declining years. When the Eastern nations were at the height of their glory, the art of gardening was by them carried to great perfection; and Cyrus the younger was as celebrated for the pleasure gardens which he had himself planted and cultivated in Lydia, as the elder Cyrus was for the famous palace which he constructed at Persepolis. According to Chardin, the gardens in the vicinity of Babylon abounded with plants and flowers glowing with the most lovely dyes, and conspicuous for their dazzling brilliancy. Of the gardens of the ancient Israelites we have fewer accounts than of those of other Eastern nations, and for the same reason that we have but few, if any, specimens of their sculpture handed down to us. The Hebrew nation being surrounded by idolators on all sides, it was necessary to prohibit, not only all familiar intercourse with the heathens, but to guard particularly against the introduction of their customs and habits, which naturally must have been very alluring and seductive to the idle and more profligate part of the Jewish community; and as the gardens or sacred groves of those nations were generally the scenes of their obscene revellings, such public plantations, together with the erection of statues and images, were forbidden by the laws of the country.

The Mahomedan faith teaches the followers of the Prophet to believe that the blessings of a future state consist in dwelling in delightful gardens. The Koran expressly states, " Whosoever doeth good works, either man or woman, and believeth, shall enter into Paradise. They shall enter gardens of pleasure together, with those of their fathers or wives that have done good."

In the flower garden the student in chemistry will find how imperfect is his art in comparison with natural chemistry, which distils from the earth and conveys by distinct channels in the smallest stem all that is necessary to produce foliage, flowers and fruit, together with color, smell and taste, the most opposite fluids and liquids being separated only by divisions so delicate as scarcely to be deemed a substance. The research into the wonders displayed in vegetation may be entered into without

hurting the sensibility of the most tender feelings, as plants and roots may be dissected without those disagreeable sensations that follow the dissection of animals. Addison observes, that it gives us a great insight into the contrivance and wisdom of Providence, and suggests innumerable subjects for meditation.

Flowers.

BY MRS. BARBAULD.

FLOWERS to the fair ! to you these flowers I bring,
And strive to greet you with an early spring ;
Flowers, sweet and gay, and delicate like you,
Emblems of innocence and beauty too.
With flowers the Graces bind their yellow hair,
And flowery wreaths consenting lovers wear.
Flowers, the sole luxury which nature knew,
In Eden's pure and guiltless garden grew.

FLOWERS in water should have a fresh supply every morning ; the dead buds and decayed leaves should be taken away, and the sodden ends of the stalks should be cut off. All the leaves should be removed from that part of the stalk which is in the vase. When the flowers begin to hang the head and show a general aspect of languor, cut off the ends of the stalks with a sharp knife, and put them about two inches deep in warm water for a few minutes ; the water should not be actually scalding, but as warm as you can hold your hand in without pain ; the moisture will make its way into the vessels of the stems, and if they be taken from the warm and immediately replaced in fresh cold water, the flowers will revive and yet live for some days or hours longer, according to their kind. They should not be exposed to a hot sun.

Vegetable Geography.

LINDLEY observes that this is one of the most curious and difficult subjects with which we can occupy ourselves. It embraces a consideration of the constitution of the atmosphere and geological structure of all parts of the globe, and of the specific effects of particular conditions of climate and soil upon vegetation; all of them points upon which we can scarcely be said to know anything. It involves the discussion of the plan upon which the world was originally clothed with verdure; and as Humboldt most truly observes, it is closely connected with the physical condition of the world in general. Upon the predominance of certain families of plants in particular districts depends the character of the country, and the whole face of Nature. Abundance of grasses forming vast savannahs, or of palms or firs, have produced most important effects upon the social state of the people, the nature of their manners and the degree of development of the arts of industry.

If we examine the surface of the globe we shall find its vegetation varying according to its inequalities and its differences of soil; we shall see that the plants of the valleys are not those of the mountains, nor those of the marsh like the vegetables of the river or of dry grounds; it will also be seen that the vegetation of all valleys, all mountains, marshes, or rivers, has a similar character in the same latitudes. The flora of the granitic mountains of Spain and Portugal is very different from that of the calcareous mountains of the same kingdoms; in Switzerland, the *Teucrium montanum* always indicates a calcareous soil, and the same may be said of the orchises of England. Hence it is inferred that the differences in the character of vegetation depend upon circumstances connected with the soil or atmosphere in which they grow.

It will be of service to name a few of these classes; and first, the Maritime, or saline plants; those which without being plunged in salt water, and floating on its surface, are nevertheless constrained to live in the vicinity of salt water for the purpose of absorbing whatever may be required for their nourishment. Among these it is requisite to distinguish those which, like the *Salicornia*, grow in salt marshes, where they absorb

saline principles, both by their leaves and roots, from which those like *Roccella fuciformis* exist upon rocks exposed to the sea air, and appear to absorb by their leaves alone; and finally, a third class, such as *Eryngium Campestre*, which do not require salt water, but which live on the seacoast and elsewhere, because their constitution is so robust that they are not affected by the action of salt.

2d. Marine plants, which live either plunged in salt water or floating on its surface. These are distributed over the bottom of the sea or salt water, in proportion to the degree of saltiness, agitation, continuity of immersion, tenacity of soil, and perhaps also the intensity of light.

3d. Aquatic plants, living plunged in fresh water, either entirely immersed, as *conservæ*, or floating on its surface, as *stratiotes*; or fixed in the soil by their roots, with the foliage in the water, as several kinds of *Potamogeton*; or rooted in the soil and either floating on its surface, as *Nymphæ*, or rising above it, as *Alisma plantago*.

4th. Plants of fresh water marshes, and of very wet places.

5th. " " meadows and pastures.

6th. " " cultivated soil.

7th. " " rocks.

8th. " " sands or very barren soil.

9th. " " sterile places.

10th. " which follow man, azotized matter necessary for their existence.

11th. " of forest.

12th. " " bushes and hedges.

13th. " " subterranean.

14th. " " mountain.

15th. " " parasitical.

16th. " " falsely.

These are De Candolle's sixteen stations, but Lindley does not seem to attach much importance to them, because, says he, they are vague and uncertain of application, and frequently common to many plants, but it is nevertheless useful to have in mind that such distinctions do exist, and to point them out whenever they take any decided peculiarity of character.

The next, and by far the most important head under which the geographical distribution of plants is to be considered, is

with reference to temperature and light, which depends first upon latitude, and secondly upon elevation above the sea. As we proceed from the pole towards the equator, we find the temperature gradually increasing; and as we ascend from the surface of the ocean up into the atmosphere, we find the temperature gradually decreasing until we reach the point of perpetual frost, where vegetation ceases. In considering the matter of the vegetation of a given climate, it is necessary to take into account the temperature *peculiar to the latitude itself*, and the reduction *caused by elevation*. The effect of elevation is not in Europe the same with all plants; there are many that grow indifferently upon the plains as upon mountains of perpetual snow. De Candolle speaks of 700 instances, with which he was acquainted, of the prevalence of this law. But, on the other hand, there are many plants the limits of which are strictly circumscribed by elevation or equivalent temperature; as, for example, the chestnut, which does not rise higher on the Swiss Alps than 2400 feet; on Ætna it reaches no higher than 4000 feet. Many of the plants found on the plains of the North occupy the mountains of the South. The Olive, in 44° of latitude, its most northern range, will not grow at a greater elevation than 1200 feet. In general, it is found as we approach the equator vegetation becomes more and more affected by elevation; and that as we recede from it these effects gradually cease.

LINDLEY remarks, that it is a common statement, that New Holland produces no eatable fruits, for that even the few wild berries which the traveller meets with, are more dry, tasteless and insipid than those of any other country. The pears, say the grumbling colonist, are made of wood; cherries have the stones on the outside of the flesh; grapes are nauseous, and grow on bindweed; the currant bushes prickly, and the gooseberries without thorns; whilst the honeysuckle has no odor, and the oak no foliage. Although these are mere idle tales, arising from the names of European plants being misapplied to New Holland species of a totally different nature, yet it is true that the whole of that vast continent is, as far as has yet been seen, destitute of any fruit-bearing plant that deserves cultivation.



Iris Germanica

Ipomea Coccinea

Viburnum Linnae

German Iris.

Indian Jasamine

Tarrestine

Printed expressly for S. Wallman.

The Iris.

THIS flower belongs to the class Triandria, order Monogynia. Its generic characters are :—corolla six-petalled, unequal ; petals alternate, jointed and spreading ; stigma petal-form, cowled, two-lipped.

Iris on saffron wings arrayed with dew,
Of various colors through the sunbeams flew.

VIRGIL.

Then clad in colors of a various dye,
Junonian Iris breeds a new supply.

OVID.

The ancients named this plant after the attendant of Juno, because its colors are the same as those which the poets and mythological writers have bestowed on the messenger of their goddess. Iris is generally depicted as descending from the rainbow, and her arch is said not to vary more in its colors than this flower that has been honored by her name. Columella observes in his tenth book :

Nor Iris with her glorious rainbow clothed,
So fulgent as the cheerful gardens shine,
With their bright offspring when they're in their bloom.

Milton distinguishes these flowers as Iris all hues. Every quarter of the world possesses the Iris, and excepting the Rose, no flowers have been more celebrated by the historian and the poet than those of this genus, which so greatly embellishes both the land and the waters, and has at various periods contributed much to the sustenance, and added to the medicines of man. Bildad, in his remonstrance with Job, uses this plant as a simile, which has been versified by Sandys :

Can Bulrushes but by the river grow ?
Can Flags there flourish where no waters flow ?

The ancients used it, says Phillips, as the symbol of Elo.

QUENCE, and it is on this account placed by the Egyptians on the brow of the Sphinx, as seen in the collection of antique statuary in the Louvre at Paris, where there are three Sphinxes of great magnitude, all of whom have this flower sculptured on their brow. May not the Egyptians have represented Moses by the Sphinx, and placed the Flag flower on the temple of this symbolical figure in allusion to the spot from which he was taken, for the daughter of Pharaoh discovered him in an ark of bulrushes, by the river brink ?

The history of France informs us that the escutcheon of that country was strewed with an indefinite number of Fleur-de-lis, as early as the time of Clovis the First, about the end of the fifth century, previously to which time the emblem of France had been either three toads or three diadems in Champ d'argent—others say three crescents surrounded with a number of bees. About the middle of the twelfth century, Louis the Seventh of France, having been excommunicated by the Pope, and his kingdom laid under an interdict, was persuaded to take up the cross and join in the romantic expedition of the Crusaders ; on which occasion he distinguished himself, as was the custom of those times, by a particular blazon, for which he chose the Iris flower, from that time called Fleur de Louis—Louis's flower—which was first contracted into fleur de luce, and afterwards into FLEUR DE LIS—Lily flower—though it has no affinity to the Lily. The Iris flower soon became celebrated in France as the Fleur de lis, and was not only used in its arms, but employed in the decorative embellishments of the crown itself. The North part of the mariner's compass was marked by its immortal author with this flower in compliment to France. We need not enter into the long detail of the addition of this flower to the arms of England when she conquered France, nor its subsequent return in 1800. It is a remarkable fact, that during the French Revolution this flower was proscribed, and hundreds of persons wearing it condemned to death ; and we are told that during this national frenzy, wherever it was conspicuous in sculpture, it was instantly defaced by the mob, who covered the obliteration by their silly cap of Liberty, which, in its turn, was obscured by the expanding wings of the imperial eagle. Napoleon substituted the Bee for the Iris flower, certainly a more rational emblem for an industrious nation than the other ; but both have since taken

their departure, and the Fleur de Lis is once more left to spangle the royal robes of France. Shakspeare wrote :

Lilies of all kinds,
The Fleur de Luce being one,

his botanical knowledge not being sufficient to distinguish the two.

It is certainly a great recommendation to these plants, that while some of the kinds blossom in early spring, others succeed them in every month until late in the fall. Their easy propagation and hardy nature render it unnecessary to dwell upon their culture; but, as Phillips says, we cannot leave the Iris of Flora without strongly recommending it a more frequent situation in every pleasure ground than it now occupies. It is a species of flower that gardeners seem to have cultivated with great delight on account of its rich and varying colors, for while it equals the bow of Iris in the softness of the tints of some of its varieties, the petals of others excel in richness the celebrated purple of Tyre, whilst other kinds exhibit a color so opposite and of so vivid a dye, as to be made emblematical of FLAME. As it has been brought from every quarter of the globe, so would we see it flourish in every part of our grounds, and even in the waters; for Scott says :

Where waves the bulrush as the waters glide,
And yellow flag flowers deck the sunny side.

It is difficult to imagine an effect more agreeable to the eye than clumps of these yellow flowers reflected in the blue waters of our winding streams and ornamental lakes. The embellishment of such situations in general is too little understood and less attended to. We would not wish to see the banks of rivers bearing visible marks of art, but the naked expanse of artificial lakes is unnatural. A proportion of aquatic plants is necessary to keep up a harmony of coloring, and to soften the abruptness of the change which catches the eye when waters are too suddenly contrasted with the land; when of sufficient size to maintain fish and aquatic birds, we should never fail to set aquatic plants, which nature instructs us to be necessary for their shelter, food, and medicine. In situations where it may be desirable to keep the waters free from plants, there can be no objection to the banks

being diversified by the yellow and purple corollas of the Iris, provided they are so judiciously placed as not only to be doubled by reflection, but carry rather the appearance of growing naturally on the spot, than of being placed there by the hand of art. Where the yellow Iris is allowed to grow on the brink of waters, the purple or blue varieties should be placed on the banks as a contrast, but in no instance in such a manner as to give the idea of a border to the lake, but rather to add irregularity and break uniformity by large clusters of these plants ascending the banks. In the most embellished borders of the vernal season, the dwarf species cannot fail to be attractive. The Persian Iris displays on the same petal nearly all the tints of the dome's high arch, and like it,

— the mingled blaze
Forms a rainbow of alternate rays.

This species flowers as early as February and March, but is of too tender a nature for the exposed border, excepting where the soil is naturally sandy and the situation warm and sheltered; it prospers well, however, when planted in bulbs filled with sandy loam, or when the bulb is placed on water in the manner of hyacinths. The fragrance is such that a few flowers will perfume a large room, and on this account, as well as the early season in which its finely painted corollas open, it is as desirable a plant for the house, as the PUMILA—DWARF IRIS, is for the open garden, where it endures the inclemency of our winters without injury, and produces its rich purple flowers in almost any soil or situation, being a native of the open hills of Austria and Hungary. Its diminutive height is its protection against the tempestuous season in which it flowers, which also adapts it as a neighbor to the Primrose, the early Narcissus, and other early flowering plants that benefit by a purple contrast. There are varieties of this Iris with pale blue, and some with straw colored and bluish colored petals, but they are neither so common nor so desirable for the season of their flowering as those of the royal purple. Many of the later blowing Irises are of a height that towers above dwarf shrubs, and they have an enchanting effect when planted among the bushes of the rosaries, or between the tall shrubs and dwarf evergreens of the shrubbery; the pale Turkey, the yellow, or the various colored, being planted in the vicinity of the purple

rhododendron, and the blue and violet varieties of Iris where white, yellow, or pink flowers abound.

CHALCEDONIAN IRIS—*IRIS SUSIANA*, takes its name from Susa, in Persia. This species requires a dryer soil and warmer situation than most other kinds, and has many qualities to recommend it to our care. Its corolla is the largest of all the species, the upper petals being as broad as a hand, and singular in their colors, being striped with black and white, whilst the falling petals are of so dark a hue as to have given rise to the name of mourning Iris. We learn from Clasius that this superb Iris was first brought from Constantinople to Vienna and Holland, in the year 1573.

The hardy sorts of Iris are easily propagated by parting their roots in the autumn; and few flowers requiring so little attention produce so fine an effect as these plants, particularly when their clumps are large. The flowers should not be removed oftener than once in three or four years, as they seldom flower so abundantly the year after having been planted.

The great BULBOUS-ROOTED—*IRIS XIPHOIDES*, and the small BULBOUS-ROOTED—*IRIS XIPHUM*, are natives of Spain, and were cultivated in England as long back as the era of Elizabeth, though in their gardens as well as in our own, they are rather rare than plentiful, though no flower which we can bestow our attention upon will be found more ornamental, for they vary so considerably in their corollas that scarcely two plants produced from seed are painted in the same manner; but the approved varieties are increased by offsets which they abundantly produce. This Iris prospers best in a poor, light, sandy loam, where it is exposed to an eastern aspect. The seeds are generally ripe in August, and should be sown in slight drills about six inches from each other. In the following spring the young plants appear above the earth with a resemblance to young onions. In this state they require no other care than weeding. In August or September of the same year after sowing, they should be transplanted into clumps or beds at about eight inches apart each way; in two or three years from their removal most of them will blossom, and new varieties may be expected. In Africa the roots of the *IRIS EDULIS* are esteemed as food after being boiled, and they are eagerly sought for in that quarter of the world by the monkeys. It is the Florentine Iris whose roots,

when dried, give out that agreeable perfume so similar to the odor of violets; it was first brought from Leghorn, and was in great demand when hair powder was more generally worn, as what was sold as violet powder was nothing more than a proportion of the powder of this root mixed with common hair powder. It is the Orris root of the shops, so frequently chewed by those who have fetid breath; it was formerly much esteemed in medicine, and old writers extol its many valuable qualities; at present it is only used for its flavor. The Scissor Iris is one of the most curious of the species. It has the slenderest stem and the smallest flower of all the Irises, and the corolla never expands till after mid-day. It is a native of Dauria, and has a synonyme for our word scissors in that language, on account of the form of the fork produced by the two branches which support the flowers. It is not even the flower of a day, for it never fails to collapse before night by a two-fold inflexion rolling inwards at the limb or upper portion, and twisting spirally together at the lower.

The IRIS GERMANICA—FLEUR DE LUCE of our gardens, yields a most beautiful paint for water colors, for which purpose the flower petals are collected before they are fully expanded, and pounded in a stone mortar with a stone-capped or wooden pestle, then put into a glass and placed for some days in a cellar or other moist place; after the space of about a fortnight the mass, which is now become liquid, is to be set over the fire in a glass pot until about a third part is consumed; then some rock alum is to be put into it, more or less, till it becomes clear and acquires its fine blue color; after which it is poured into shells for use. Its root was formerly used to prevent beer becoming stale, by suspending it in the cask; and it was in like manner suspended in casks of wine to communicate both its taste and smell to the liquor. Lindley remarks, that in Iris the genus from which the tribe takes its Latin name, *Irideæ*, the structure is very curious. The three sepals are broad and spreading, and often ornamented with a beautiful feathered crest; the three petals stand erect, and curve over the centre of the flower; while the stigmas are broad, richly colored parts, resembling petals, and curve away from the centre. At first sight you would suppose the Iris was altogether destitute of stamens; but if you lift up the stigmas you will find the runaways snugly hidden beneath their

broad lobes, and lying close to a humid lip, through which the influence of the pollen is conveyed to the ovules. The widening of the stigma is very common in this tribe; even in the crocus it occurs, only the stigmas are so rolled up that you do not discover it until you unroll them; they are in fact so much heavier than the power of the style can support, that in the saffron crocus, in which they constitute the substance called saffron, they hang down on the outside like an orange tassel. Also to this natural order belong those countless species of *Ixia*, *Gladiolus* *Watsonia*, *Babiana*, &c., which spring up at the Cape of Good Hope upon the commencement of the rains, and soon cover the parched and half-naked karroos with a robe of the deepest green, adorned with all manner of gay and sparkling colors.

The Indian Jasmine.

THIS is a genus of the class Pentandria, order Monogynia. Its characters are :—calyx five divisions, unclothed; corol funnel-shaped, with five folds; stigma globe-headed, covered with protuberances; capsule two or three-celled, many-seeded. This plant belongs to the natural order Convolvulaceæ or Bindweed tribe, from its habit of twisting or binding around substances. It is a native of the West Indies, and one of their most beautiful ornamental climbers. It is annual in its duration. The whole plant is very downy; the leaves heart-shaped, rather long, and tapering to a point; the flower-stalks bear five flowers; the flower-cups warty and bearded. It bears a succession of bright scarlet flowers from June to September. The generic name is derived from two Greek words, meaning, resembling a vine; the specific, from the color of its flowers. Speaking of the order to which it belongs, Lindley observes that these plants are monopetalous, but have a twining stem, and corollas that are neatly plaited when they close, like the paper purses made for children. These corollas open or close under the influence of light or darkness, some opening only in the day, others in the night, and in one case so sensitive that they contract beneath the touch like the leaves of the *Mimosa*. The calyx consists of five

sepals, overlying each other so completely that you can seldom perceive more than the two outermost. The fruit contains three cells generally; the embryo of the seeds is doubled up in the most curious way, just as if there was not room enough in the seed for it to grow. The roots of many of the tribe are large and fleshy; they possess powerful medicinal properties, and are fit for food only in the case of the sweet potatoe, which was so much esteemed before the common potatoe displaced it in Europe. To this tribe also belongs an odd little plant called Dodder. Have you never remarked upon the stems of some shrubs or trees, clusters of stout, reddish cords, which are so twisted and intertwined that you would take them for a knot of young snakes, if the color first, and then their touch, did not undeceive you? If you have ever remarked so strange an appearance you have seen DODDER, which, originally earthborn, soon lays hold of some neighboring plant, twists her leafless shoots around it, fixes them firmly to the branches, quits her hold of the soil, and thenceforward, as if ashamed of her humble origin, feeds only upon the dews and rain, till the frost comes, nips her tender frame, and leaves her dead and shrivelled form still clinging to its place, a monument of the punishment of vegetable ambition. This strange plant is extremely imperfect, has no leaves, except a few stunted scales, and its flowers are little white things collected in clusters. The fruit consists of membranous capsules, in each of which are two cells and four seeds. **The SCARLET MORNING GLORY—IPOMEA Coccinea,** emblemises the sentence, I ATTACH MYSELF TO YOU.

The Laurestine.

THIS is a genus of the class Pentandria, order Trigynia. The name is derived from a Latin word, meaning pliant, on account of the character of most of its species. Its characters are:—calyx small, five-toothed; corol bell-form, divided into five parts, with lobes turned back; stigmas with very short styles; berry or drupe one-seeded. We have a number of species of this class indigenous in the United States, besides a few that are naturalized; some still remain in the conservatory. The VIRBURNUM

LINUS—LAURESTINE, is an exotic, as Tyas remarks, one of the prettiest of evergreen shrubs, and the gift of Spain to our highly favored land. The leaves are ovate, oblong, entire. The divisions of the veins and the young branches are glandular. Neither the hot breath of summer, nor the cold of winter, can rob it of its charms; but to preserve it we must tend it with assiduous care. The symbol of a constant and delicate friendship, it ever seeks to please, yet dies if neglected. In floral language it is the emblem of the sentence, I DIE IF NEGLECTED. The whole genus, almost without exception, consists of ornamental shrubs; most of our species frequent the woods, where they may be seen in flower, presenting a delicate white aspect, from May to the early part of July. They belong to the natural order Caprifolaceæ, or Honeysuckle tribe. As Lindley remarks, at first sight these plants seem to be entirely unlike the Honeysuckle, but a careful study of their structure, remembering the *essential* characteristics, will leave no doubt of their affinity. In fact, were they twining it would never be doubted. In North America there grows a plant of this tribe with broad leaves, clusters of flowers sitting close to their bosom, followed by yellow berries, called *Triosteum Persoliatum*, the seeds of which have proved the best of all substitutes for coffee, which is also allied to the same order. This plant, *COFFEA ARABICA*, the infusion of whose seeds forms the beverage which is probably the most universally grateful of all that the luxury of man has prepared, belongs to a very extensive natural order, almost confined to the warmer parts of the world, comprehending the meanest weeds and the most noble flowering trees, obscure herbs with blossoms that it almost requires a microscope to detect, and bushes, the scarlet corollas of whose flowers are many inches long, and producing drugs invaluable to man for their important medicinal properties; ipecac, coffee, and various kinds of fever barks, especially those of Peru, are among its useful products. Coffee itself consists of the seeds of the plant divested of their skin, and of a dark purple fleshy rind that envelopes them. They are formed almost entirely of albumen, at the base of which a very small embryo is placed. It is very probable that all other plants of either the honeysuckle or coffee tribes would answer the purpose equally well, provided their seeds were large enough, and their albumen of a hard, horny texture.

The Coltsfoot.

THIS is a genus of the class Syngenesia, order Polygamia Superflua. Its characters are :—calyx scales equal, as long as the disk, somewhat membranous; down simple; receptacle naked. The name is taken from a word meaning a cough, as it has had a considerable reputation in the relief of complaints of the chest. We have many species of this genus common in the United States, the most well known of which is perhaps the *TUSSILAGO FRIGIDA*—WILD COLTSFOOT, which is recognized by its triangular, heart-shaped leaves, unequally toothed, and downy on their under surface; it is most found in mountain woods, producing, in May, a corymb of white flowers, with a bluish, approaching to pale purple disk. Our species, represented in the plate, *TUSSILAGO FRAGRANS*—SWEET SCENTED TUSSILAGE, is an ornamental frame perennial, bearing pale red, sometimes white flowers, from January to March. The leaves are of a roundish heart-shape, equally toothed, and downy beneath. Phillips remarks:

He trudged along, unknowing what he sought,
And whistled as he went for want of thought.

That even classical ground produces minds of this description, is instanced in the long neglected plant of which we are about to speak. Although a native of Italy, it remained in obscurity until the nineteenth century, when M. Villan, of Grenoble, was attracted by its agreeable fragrance at the foot of Mount Pilat, from whence he brought it to perfume the winter gardens of the continent, and it cast its first odor on British shores in the year 1806, and was soon sent to the United States, in which it has proved a favorite wherever introduced. As its perfumed flowers expand so early in the season, it cannot fail of being welcomed by every lover of sweet smells. In England it has become so far naturalized as to discharge its fragrance as freely over their walks in the winter months as the Egyptian Reseda disperses its odors over those of the summer. It is hailed by many as the Heliotrope of the open garden, and as a vegetable winter friend of no small importance in the parterre. The modest flowers of this plant were too insignificant to have attracted the notice of



Fusilago Fragrans,
Coltsfoot.

Drawn expressly for T. K. Willman.

the ignorant, who have no souls to admire humble merit, whether in men or flowers, until it has received the sanction of fashion, or the patronage of the great.

It is the exalted mind alone that can penetrate through the flimsy veil of a gaudy exterior, and discover merit in a hovel. Had not Evelyn dragged Gibbon from such a situation into the presence of his sovereign, the world would never have been enriched by his incomparable writings, nor would England have had to boast of such a treasure. The plants of the hedge are unobserved by the vulgar, who cannot conceive that beauty can flourish out of the garden's bounds. Madame de Latour could not leave this fragrant plant without a place in floral language, and therefore says under this head, **JUSTICE SHALL BE DONE YOU.** And as an illustration that the vulgar have not the power to discern merit, either in men or plants, until it is pointed out to them by the finger of the world, she gives the following anecdote of a young miller in Holland, who, having a taste for painting, exercised it at his leisure hours in portraying the few objects within his limited circle; the mill, his master's cattle and the pastures, were all that presented themselves to his confined view, but these he varied so accurately by light and shade, as the effect of the clouds changed them, as fully to compensate for the want of variety; yet his labors were not appreciated, and when he had finished one picture, he bartered it away for materials to paint another. It so happened that the master of a tavern, who expected company at his house, wished to ornament the bare walls of his apartment, and purchased one of these paintings for a crown, which probably would have still remained unnoticed on his wall, had not chance sent an artist of judgment to his tavern, who had no sooner entered the room where the picture was hanging, than he discovered the merit of the young rustic painter, and immediately offered the inn-keeper a hundred florins for what had cost him a Dutch crown; and paying down the money desired the landlord to procure him all the paintings he could obtain from the young miller at the same price, which circumstance soon brought him into repute and enabled him to follow the bent of his inclination, and delight the connoisseurs of paintings by the faithful touches of his pencil.

The thyrsi, or bunches of flowers, of this plant are of a whitish or reddish lilac tint, and its odor greatly resembles the Helio-

trope. It is easily propagated by parting the roots in the summer, and planting them in a free, light and fresh earth, in a warm and sheltered situation. It is also planted in pots for the purpose of perfuming our winter apartments ; and thus the plant which so short a time back could not by all its fragrant charms obtain a corner in a cottage garden, now fills a situation in the proud saloon to the admiration of all the crowd that usually attend the decorated apartments of gay parties. Mrs. Hemans wrote for a broken flower of the Sweet-scented Tussilage —

O wear it on thy heart, my love,
 Still, still a little while,
 Sweetness is lingering on its leaves,
 Though faded be their smile ;
 Yet for the sake of what hath been,
 O cast it not away ;
 'Twas born to grace a summer scene,
 A long, bright, golden day.

A little while around thee love,
 Its fragrance yet shall cling,
 Telling, that on thy heart hath lain
 A fair, though faded thing.
 But not even that warm heart hath power
 To win it back from fate ;
 Oh ! I am like the broken flower,
 Cherished too late, too late.

* It has been beautifully observed, that the rural feeling which runs through British literature continues down from the Floure and Leafe of Chaucer to the present day. The pastoral writers of other countries appear as if they had paid nature an occasional visit, and become acquainted with her general charms ; but the British poets have wooed her in her most secret haunts. A spray could not tremble on the breeze, a leaf could not rustle to the ground, a fragrance could not exhale from the humble violet, nor a daisy unfold its crimson tints to the morning, but it has been noticed by these impassioned and delicate observers, and wrought into some beautiful morality.



Papaver Rhoeas.
Pois.

The Daisy.

Who does not love the simple flower,
With silver crest and golden eye,
That welcomes every changing hour,
And weathers every sky ?

'Tis Flora's page: in every place,
In every season fresh and fair,
It opens with perennial grace,
And blossoms everywhere.

On waste and woodland, rock and plain,
Its humble buds unheeded rise,
The rose has but a summer reign,
The Daisy never dies.

THIS plant is in the class Syngenesia, order Polygamia Superflua. The generic name, *Bellés*, is from an ancient Latin word, *bellus*, handsome, from which comes also the French word, *bel*. The specific name, *Perennis*, signifies the fact of its continued existence for years. The generic characters are: calyx hemispherical; scales equal; egret none; receptacle cone-shaped; seed obovate. It is a pretty evergreen perennial, flowering in pastures from early spring to the end of autumn. It sends up single flower-stalks from the root, which bear but one flower each, and is naked, entirely free from hairs or down. The leaves are large, obtuse at the end, gradually tapering into a stalk at the base, and scalloped with notches on the margin, which point neither to the base or apex. The English name of Daisy is derived from a Saxon word, meaning day's eye, in which way Ben Jonson writes it; and Chauveer calls it the "eie of the daie." Tyas presumes it is called day's eye, from the nature of its blossom, which opens at daybreak and closes at sunset. The leaves and flowers are rather acrid, and, though formerly much used, have gone entirely out of regular practice.

"Malvina leaning over Fingal's tomb, mourns for the valiant Oscar and his son, who died before he had seen the light.

"The virgins of Morven, to calm her grief, walk often around her, celebrating, by their songs, the death of the brave and the new-born.

"The hero is fallen, say they, he is fallen! and the sound of his arms echoes over the plain; disease, which takes away courage; age, which dishonors heroes, can no longer touch him; he is fallen, and the sound of his arms echoes over the plain!"

"Received into the heavenly palace inhabited by his ancestors, he drinks with them the cup of immortality. Oh! daughter of Oscar, dry thy tears of grief; the hero is fallen! he is fallen! and the sound of his arms echoes over the plain."

"Then, in a softer voice, they said again unto her, The child who has not seen the light, has not known the bitterness of life; its young soul, borne on glittering wings, arrives with the diligent Aurora in the palace of day. The souls of children who have, like it, broken the chains of life without sorrow, reclining on golden clouds, present themselves, and open the mysterious portals of Flora's cabinet. There this innocent troop, ignorant of evil, are for ever occupied in enclosing in imperceptible seeds the flowers that blow in each spring; every morn they scatter these seeds upon the earth with the tears of Aurora; millions of delicate hands enclose the rose in its bud, the grain of wheat in its folds, the vast branches of the oak in a single acorn, and sometimes an entire forest in an invisible seed."

"We have seen, oh, Malvina! the infant you regret, reclining on a light mist; it approached us, and has shed on our fields a harvest of new flowers. Look! oh, Malvina! among these flowers we distinguish one with a golden disk, surrounded by silver leaves; a sweet tinge of crimson adorns its delicate rays; waved by a gentle wind, we might call it a little infant playing in a green meadow. Dry thy tears, oh, Malvina! the hero is dead, covered with his arms; and the flower of thy bosom has given a new flower to the hills of Cromlin."

"The sweetness of these songs relieved Malvina's grief; she took her golden harp, and repeated the hymn of the new-born."

"Since that day the daughters of Morven have consecrated the Daisy to infancy; it is, said they, the flower of innocence, the flower of the new-born."

With little here to do or see
Of things that in the great world be,
Sweet daisy! oft I talk to thee,
For thou art worthy

Thou unassuming common-place
Of nature, with that homely face,
And yet with something of a grace,
Which love makes for thee.

Oft on the dappled turf at ease
I sit, and play with similes,
Loose types of things through all degrees,
Thoughts of thy raising ;
And many a fond and idle name,
I give to thee for praise or blame,
As is the humor of the game,
While I am gazing.

A nun demure of lowly port,
Or sprightly maiden of love's court,
In thy simplicity the sport
Of all temptations ;
A queen in crown of rubies drest ;
A starveling in a scanty vest ;
Are all, as seems to suit thee best,
Thy appellations.

A little Cyclops with one eye,
Staring to threaten and defy,
That thought comes next—and instantly
The freak is over,
The shape will vanish, and behold
A silver shield with boss of gold,
That spreads itself, some fairy bold,
In plight to cover !

I see thee glittering from afar ;—
And then thou art a pretty star :
Not quite so fair as many are
In heaven above thee !
Yet like a star with glittering crest,
Self-poised in air, thou seem'st to rest ;—
May peace come never to his nest,
Who shall reprove thee !

Sweet flower ! for by that name at last,
When all my reveries are past,
I call thee, and to that cleave fast,
Sweet silent creature !
That breath'st with me in sun and air,
Do then, as thou art wont, repair
My heart with gladness, and a share
Of thy meek nature !

Phillips says that this flowering weed of temperate climates cannot be made to flourish between the tropics, although it propagates itself on every patch of turf in colder places ; as it failed to spangle the fields of the south-east of Europe, where the arts were anciently so happily nurtured, it happens that we have no Greek name for this plant, and hence must have recourse to a Latin one. Its roots, boiled in milk, were frequently given to little puppies to keep them of a diminutive size ; but what effect this food would have on the growth of the canine species, we must leave it to those who are curious in little dogs to discover. Fabulous history informs us that this plant is called Bellis, because it owes its origin to Belides, a grand-daughter of Danaus, and one of the nymphs called Dryads, that presided over the meadows and pastures in ancient times. Belides is said to have encouraged the suit of Ephigeus, but whilst dancing on the grass with this rural deity, she attracted the admiration of Vertumnus, who, just as he was about to seize her in his embrace, saw her transformed into the humble plant that now bears her name. An old astrological writer tells us that this plant is under the sign Cancer, and under the dominion of Venus, and therefore good to cure all the pains caused by the fair goddess, particularly those of the breast ; we therefore recommend all *lack-a-daisical* swains to hasten to the meadows and there give thanks to nature for having seasoned this crop so bountifully. It is a crop for which the farmer never prays, it being considered a troublesome weed in pasture lands, where it occupies a large portion of ground to the exclusion of grass and other useful herbs ; its acrid taste is ungrateful to cattle, and it is even rejected on the common by the close biting geese. The most careless observer of plants must have noticed that the Daisy not only closes its petals at night, but that they are carefully folded over the yellow disk in rainy weather. It must likewise have struck the attention of the curious that not only this flower, but most others which are natives of moist climates, have the power and instinct of securing their parts of fructification from the rains of the day or dews of the night, whilst those of regular dry climates are quite destitute of this wise provision of nature. The botanist would understand the nature of the Daisy by the class and order we have given, although he might not have seen it. The Daisy, continues Phillips, has been placed in the class Syngenesia, because it is a

compound flower, or rather composed of a number of small yellow florets placed on one common receptacle, as so many small cups might be placed on one tray or salver; for if the thumb or yellow disk of the common Daisy is closely examined, it will be found to be composed of about one hundred and fifty little florets, those of the centre being of a tubular shape and containing the anthers, whilst those near the margin are ligulate or of a flat shape, and to each of them is attached a stigma. The use of the petals which form a ray round these little yellow florets is to secure them from the effects of inclement weather, until the pollen of the anthers is discharged on the stigma so as to prepare seed for future plants; and when this part of the economy of nature is performed, the ray of the Daisy remains expanded, and does not shut when Titan goes to bed, but remains open until the petals decay.

The single Daisy, which was seized in the meadows and placed in the garden by Vertumnus, being placed out of its natural situation, has taken new habits, which prevent its propagating itself by seed, as the effect of transplanting and cultivation in richer soils has been that of transforming the yellow florets into petals, until the flower has become so completely doubled as to lose all appearance of the disk; but, like the double hepatica, it is easily propagated by parting the roots at any season of the year almost, though the most favorable time is from the middle of September to the middle of October, as they will then flower stronger in the spring than those plants which are divided in February. It is recommended to divide the roots every year, and to transplant them, to avoid degeneration, or more properly speaking, a return to their natural state. We have never observed this circumstance take place, but have frequently known the plants decay altogether if left undisturbed for three or four years. The double Daisy thrives best in a moist loam with no mixture of manure; and the plants should have the advantage of the morning sun and a shelter from the mid-day heat, by placing them on the south-east side of shrubs or trees, as in such situations the flowers are not only larger, but continue much longer in blossom than those exposed to the full sun. The mode of placing them depends much on the size and nature of the garden. Sometimes it is employed, as it is generally done by the English cottagers, as an edging for borders, being infi-

nitely preferable to that of box for such situations ; but an edging of any description shows a want of taste in the planter, and if these flowers are placed in patches of twenty or forty plants on a spot about three inches apart, they give a most delightful effect, either in the foreground of the shrubbery or the flower garden. The varieties should be kept in distinct situations, and their colors so contrived as to be made subservient to other flowers, as by planting the red or scarlet variety near clumps of the snowdrop or other white blossoms. The white Daisy in the neighborhood of yellow crocuses or blue flowers, and the striped and variegated kinds are seen to most advantage when surrounded only by the green foliage of flowers that blossom at a later season. The varieties of the double Daisy are not confined to its different colors, as some of them, instead of being composed of flat petals, are entirely formed of a mass of fistular florets or little pipes ; these are distinguished as quilled Daisies. The most singular variety is the Proliferous Daisy, commonly called the Hen and Chicken Daisy, because the flower is surrounded by a number of smaller flowers, which are produced from the sides of the principal flower, out of one and the same calyx. They appear like satellites revolving round a noble star, presenting a beautiful appearance.

Art thou waken'd already and decking the green ?
 How transient and light has thy winter sleep been ?
 But thou art not of them which shrink back in dismay,
 If the season be adverse, or darkling the day.

As the lark amongst birds when it chants its blithe strain,
 As the lamb when it sports 'mid the flocks of the plain,
 Such art thou amongst flowers, the blithest of all,
 On which sunbeams are shining, or dewdrops do fall.

Give the rosebud to Beauty ; for Innocence fair
 Let the lily a chaplet like snow-wreath prepare ;
 But though beauty and innocence both meet in thee,
 Sweet Cheerfulness claims thee her emblem to be.

How joy'd I to greet thee in childhood's gay hours,
 When I wandered light-hearted in search of spring flowers .
 Though the violet and primrose I own'd were more rare,
 Yet the garland ne'er pleased me till thou didst bloom there

That season of brightness has fled long ago,
 And Sorrow her finger has pass'd o'er my brow ;
 Yet I never now meet thee in spring's balmy hour,
 But thou seem'st for one moment those days to restore.



Aesculus Hippocastanum

Horse Chestnut.
Drawn expressly for Dr. Wetmore

The Horse Chestnut.

THIS tree is in the class Heptandria, order Monogynia. The generic name is derived from a Latin word by which a tree was called that furnished the Italians with an esculent or eatable fruit. Its characters are : calyx inflated, four-toothed, sometimes five, irregular ; corol similarly divided, inserted on the calyx, hairy ; capsule three-celled ; seeds large, solitary. This tree came originally from the northern parts of Asia, and has migrated to this country in a curiously long and circuitous route, by way of Constantinople, Vienna and France. Lindley, in describing this tribe, takes the *ÆSCULUS ROSEA*—ROSE COLORED HORSE CHESTNUT. The leaves, he observes, are regularly opposite to each other on the branches, and are divided into several toothed lobes, which all proceed from one common point, at the top of a strong round foot-stalk. The flowers appear in compact, stiff, erect clusters, at the ends of the branches. The floral leaves are small, and quickly wither away, falling off, and leaving a scar behind them. Their calyx is a fleshy, smooth, reddish cap, divided into five unequal, oblong, blunt lobes. The petals are four only ; their claw is long and channelled, inserted below a one-sided, wrinkled, inconspicuous disk ; their limb oblong, crumpled, crisped, of a bright yellowish red color, changing into bright orange yellow at the base, and covered with soft hairs ; two of the petals stand at the back of the flower, and two at the sides, overlapping the former a good deal, and exceeding them considerably in size ; a fifth petal is wanting from the front, and hence this flower is both unequal and unsymmetrical in its corolla, which irregularity occurs in every part except the ovary. We have already seen that the lobes of the calyx are unequal ; the disk has also been described as one-sided, and you will next find that the stamens are unsymmetrical with regard to the surrounding parts. Instead of being five or ten, and so corresponding with the calyx, or four or eight, which would agree with the petals, you will find only seven, which agree with neither ; they are curved downwards towards the front of the flower, the filaments covered with long hairs, which protect the style, terminating in oblong, red, hairy anthers, tipped with a reddish point. The pistil is covered with hairs,

and bent forwards and downwards in the direction of the stamens. It has a simple style, the point of which, where the stigma is, has no hairs, and a fleshy two or three-celled ovary, the sides of which are deeply channelled by the pressure of the filaments. In each cell are two ovules, one of which rises up while the other hangs down from a projecting horizontal placenta. The fruit becomes an unequal sided, leathery, prickly seed vessel, opening by two or three valves, and containing one large, roundish seed in each cell. The seeds have a hard, shining, deep brown coat, a very broad scar on one side, and a little conical elevation which touches with its point one part of the scar. This conical elevation represents the position of the radicle of the embryo that is hidden beneath the seed coat; on removing the latter, a roundish, wrinkled, fleshy body is found, which cannot be separated into cotyledons, but whose radicle curved down upon itself is distinctly visible. We have here one of several instances in which the cotyledons attach themselves so closely together as makes it impossible to separate them. The plumule, or growing point of this embryo, lies closely packed between the bases of the consolidated cotyledons, and one wonders how it is to escape from them when the time shall arrive for the seed to commence its growth into a plant. A simple alteration in the adjustment of the parts produces the desired effect. As the cotyledons cannot unfold in the usual manner in order to allow the plumule to pass between them, the passage of the latter upwards into the air is provided for by a slight extension of the bases of the cotyledons, which begin to lengthen when the radicle forces itself into the earth, and thus extricate the plumule from what would otherwise be its prison-house.

The *ÆSCULUS HIPPOCASTANUM*—HORSE CHESTNUT, is a noble and hardy tree, rising to the height of from fifty to sixty feet, and elegantly proportioned, and when in blossom, which it is with us in the months of May or June, few trees can compare with it in beauty. This stately and ornamental tree gives the deepest and most solemn shade of any with which we are acquainted. It bears five or seven leaves on one stalk, spread out like the fingers of a human hand. An English writer describes it when in full blossom like a mountain of ivory and emeralds; but this effect soon gives place to its shadowy depth of coloring. Though naturalized in Europe for more than two centuries, it does not

rank among their forest trees. It is extremely well suited for the adornment of parks, and to be placed before the mansions of the great. In France, they fully appreciate its value for such purposes, and at the Tuileries it rises around the basin in masses of incomparable beauty. At the Luxembourg, it spreads its branches in accordant pomp and splendor :

There avenues of chestnuts high,
With vaulted roofs conceal the sky.

In the beginning of spring, one rainy day is sufficient to cover it with verdure ; and when planted alone, nothing surpasses the elegance of its pyramidal form, the beauty of its foliage and the richness of its flowers, which sometimes make it appear as an immense chandelier all covered with pearls. Fond of ostentation and richness, it covers with flowers the grass which it overshadows, and yields to the idler a most delightful shade ; but to the poor man it is of little service, supplying him with a light and porous, and consequently soft and perishable timber. The fruit has a bitter, disagreeable taste, and is to us extremely unhealthy, the reverse of which holds in the case of cattle ; deer eat them with avidity, and the Turks, from grinding the nuts and mixing it with the corn they fed their horses, occasioned its common name. The nuts produce a considerable quantity of the finest starch. The bark has been of some service in tanning, but at present is not as much used as it was formerly, on account of the discoveries and improvements in that art having placed cheaper and better articles at the command of those who require such things. We find an account of the VARIEGATED LEAVED HORSE CHESTNUT—*ÆSCULUS FOLIA VARIEGATA*, in some of our agricultural works. It was discovered by Kenrich in his nursery grounds, in 1841. Some of the leaves are wholly of a pure white color ; others of a pure white over one half to the central division ; others striped with pure white and green. In floral language the Horse Chestnut is the emblem of LUXURY.

The Sap.

MODIFIED FROM LINDLEY.

For the sustenance of plants a fluid is necessary, which is absorbed by the roots from the earth, then sent upwards into the stem, afterwards impelled into the leaves, whence it descends through the liber, transferring itself to the inmost parts of the wood. This fluid, which constitutes the blood of plants, is called the sap. When first introduced into the system, and even when altered in some degree by having dissolved the various substances it encounters in its passages, it is TRUE SAP; afterwards, when its nature has become more changed by elaboration in the leaves, it becomes what is called the PROPER JUICE. If the sap be examined in its most simple state, it will be found to consist of water, mucilage, and sugar. As the two last cannot have been absorbed directly from the earth, they afford a good proof of the power of the minute spongioles or terminal extremities of the roots, to act like stomachs and digest it. In addition to the supply of sap which is obtained by the roots, a certain quantity is no doubt also absorbed from the atmosphere by the leaves, as is evident from succulent plants, which will continue to grow and acquire weight long after the roots are severed from the earth. This absorption on the part of the leaves generally takes place at night, or in cloudy weather; while perspiration, on the other hand, goes on in the day time, in bright weather. LINK SAYS, THAT THE FOOD OF PLANTS MUST BE COMPOSED OF OXYGEN, HYDROGEN, CARBON AND NITROGEN. Water, consisting of oxygen and hydrogen alone, is not sufficient. Many experiments indeed have been instituted to prove that pure water is a sufficient food, especially by Van Helmont, Eller, Bonnet, Du Hamel, and others; but it is probable, as Wallerins has inferred, that the water out of which plants are formed already contains the necessary principles. To this it is objected that plants grown in water alone never arrive at perfection, or mature their seeds. But this is not strictly true; they do perfect their seeds; but it is not surprising that crude water should be insufficient for pur-

poses which are fully answered by water properly mixed and tempered. That the extractive matter contained in the earth was the real food of plants was long ago stated; and most physiologists have adopted this opinion. But it has been estimated by Theodore de Saussure, that a plant, when dried, does not derive more than a twentieth part of its weight from extractive matter and carbonic acid dissolved in water; supposing this calculation not very accurate, it is not at least very far from the truth, and at least serves to show that extractive matter and carbonic acid are not alone sufficient for the nutriment of plants. Nevertheless, if neither of these two can be considered to constitute exclusively the food of plants, it is at least quite certain that they not only cannot exist without the latter, but that it forms a principal part of their food. It is well known that roots cannot perform their functions unless within the reach of the atmosphere; which arises from the necessity for their feeding upon carbonic acid, which, after having been formed by the oxygen of the atmosphere combining with the carbon of the soil, is then received into the system of the plant, to be impelled upwards, dissolved in the sap till it reaches the leaves, where it is decomposed by light, the oxygen liberated and the carbon fixed. It has also been ascertained that treat plants as you will, they will neither grow nor live upon any element unless carbonic acid is present. Those principles are called foreign to plants that cannot be referred to the four elements we have mentioned, such as the various salts. That some plants have the power of secreting one kind of accessory principle, and others another kind, from the same food, is clear, from the fact that if wheat and peas be grown in the same water, earth, or medium, the former will uniformly deposit silex in their cuticle and the latter never.

The course which is taken by the sap, after entering the plant, is the next subject of consideration. The opinion of the old botanists was, that it ascended from the roots between the bark and the wood; but this has long been disproved by modern investigators, and especially by the experiments of Mr. Knight. If a trunk is cut through in the spring, at the time the sap is rising, this fluid will be found to exude more or less from all parts of the surface of the section, except the hardest heart wood, but most copiously from the alburnum. Observations of the same nature have also proved that it descends through the liber.

But the sap is also diffused laterally through the cellular tissue, and this with great rapidity, as will be apparent upon placing a branch in a colored infusion, which will ascend and descend in the manner just stated, and will also disperse itself laterally in all directions round the principal channels of its upward and downward route. That there must be an exceedingly rapid flow of sap in many plants, is evident from the great loss they experience by perspiration, all of which must be made good by fluid absorbed by the roots. With this function are connected all the phenomena that attend transplantation. If a growing plant is removed from one situation to another in the summer, it will die, because its spongioles will be so much destroyed as to be incapable of absorbing fluid so fast as it is given off by the leaves, and hence the system will be emptied of fluid. But if a plant is growing in a pot it may be transplanted at any season of the year, because its spongioles being uninjured will be able to counterbalance the loss caused by perspiration as well after transplantation as before, if not better.

With regard to the vessels through which this universal diffusion of the sap takes place, it has already been stated that its upward course is always through the woody fibre, and probably also through the ducts, and that it passes downwards through the woody fibre. But there can be no reasonable doubt that it is also dispersed through the whole system, by means of regular tubes or vessels expressly for its conveyance, which are invisible to our eyes even aided by the most powerful glasses.

The accumulation of sap in plants appears to be attended with very beneficial consequences, and to be deserving of the especial attention of gardeners. It is well known how weak and imperfect is the inflorescence of the turnip tribe forced to flower before their fleshy root is formed; and how vigorous it is after that reservoir of accumulated sap is completed. Mr. Knight remarks that the fruit of melons which sets upon the plant when very young, uniformly falls off; while on the contrary, if not allowed to set until the stem is formed, and much sap accumulated for its support, it swells rapidly, and ripens without experiencing any deficiency of food in the course of its growth. In like manner, if a fruit tree is by any means prevented bearing its crop one year, the sap that would have been expended, accumulates, and powerfully contributes to the abundance and perfection of

the fruit of the ensuing year. Again, the planting of large tubers of the potatoe is another proof of the importance of plenty of the accumulated sap to the vigorous growth of all plants.

The cause of the motion of the sap is a subject which has long excited great curiosity, and has given rise to numberless conjectures. But the difficulty will be readily solved by considering that plants are living beings, and that in them the circulation of the sap is owing, in a great measure, to the same causes that produce the circulation of blood in man. It is hardly worth while in this place to explain or refute the doctrines of ENDOSMOSE and EXOSMOSE, which is undoubtedly the most ingenious of all the theories advanced by the chemical philosophers.

WHITLAW observes, that it is well known the American Indians can cure the bite of the most venomous reptiles, except in cases where a blood-vessel has received the poison, the consequence of which will cause death in a very few minutes. But in acute inflammation, they always succeed if the remedy be applied in time, even when the inflammation is very considerable. They are not less successful in the most desperate instances of the Ticunas or American poison, and Woorara. They always compound their poison in the same manner, and follow with the most scrupulous exactness, the proportions taught them by their forefathers. Their arrows, when poisoned, and when they penetrate the body, will prove fatal alike to men and animals. Notwithstanding their deadly effects, an antidote has been discovered by the Indians, made from the *Eupatorium Scandens* of Linnaeus. The warriors were in the habit of taking the expressed juice of the plant to battle, in order to administer from four to six ounces of it to such as were wounded, as it will instantly destroy the effects of the poison; but if not taken immediately after the wound is inflicted, the consequences will prove fatal in a few minutes. The most respectable tribes do not use it.

The Shadow of a Flower.

BY MRS. HEMANS.

"TWAS a dream of olden days,
That art, by some strange power,
The visionary form could raise
From the ashes of a flower.

That a shadow of the rose,
By its own meek beauty bowed,
Might slowly leaf by leaf unclose,
Like pictures on a cloud.

Or the Hyacinth to grace,
As a second rainbow spring,
Of summer's path a dreary trace,
A fair, yet mournful thing !

For the glory of the bloom,
That a flush around it shed,
And the soul within, the rich perfume,
Where are they ? fled, all fled.

Naught but the dim faint line,
To speak of vanished hours,
Memory, what are joys of thine ?
Shadows of buried flowers.

BUSHY GERANIUM.—The entire art of making these bushy, so as to cover the pot and be a dwarf at the same time, consists in judiciously stopping the plant, which is no more nor less than pinching off the end, or, as it were, pinching the heart out; but this should not be done until there are two pair of leaves, besides the parts to be pinched off. This stopping induces side shoots directly, and the pots have to be looked over occasionally, to see that none of the side shoots grow too vigorously; if any are found doing so, they must be pinched off so as to keep the plant in form.

Internal Modifications.

THE internal structure of the stems of flowering plants is subject to two principal and to several subordinate modifications. The former are well illustrated by such plants as the oak and the cane, specimens of which can be easily obtained for comparison. A transverse slice of the former exhibits a central cellular substance or PITH, an external cellular and fibrous ring or BARK, an intermediate woody mass and certain fine rays radiating from the pith to the bark, through the wood, and called the MEDULLARY RAYS; this is called EXOGENOUS STRUCTURE, and the plants in which it occurs, OUTSIDE GROWERS. In the cane, on the contrary, neither bark, pith, wood, nor medullary rays are distinguishable; the transverse section exhibits a large number of hard spots caused by the section of bundles of woody tissue, and a mass of cellular substance in which they lie embedded. This kind of structure is named endogenous, and the plants in which it occurs are termed INSIDE GROWERS. In both cases there is a cellular and vascular system distinct from each other; by a diversity in the respective arrangements of which the differences above described are caused.

The cellular system in an exogenous stem chiefly occupies the centre and the circumference, which are connected by thin vertical plates of the same nature as themselves. The central part (fig. 5 a) is the PITH, that of the circumference (b) is the BARK, and the connecting vertical plates (c) are MEDULLARY RAYS.

The PITH is a cylindrical or angular column of cellular tissue, arising at the neck of the stem, and terminating at the leaf buds, with all of which, whether they are lateral or terminal, it is in direct communication. Its tissue, when cut through, almost always exhibits a six-sided character, and is frequently larger than in any other part. When newly formed, it is green, and filled with fluid; but its color gradually disappears as it dries up, and it finally becomes colorless.

The BARK is the external coating of the stem, lying immediately over the wood, to which it forms a sort of sheath, and from which it is always separable distinctly. When but one year old it consists of an exterior coating of cellular substance, called the

CELLULAR INTEGUMENT or the EPIDERMIS, and of an interior lining of woody fibre, called the LIBER or INNER BARK; if more than one year old, then it is composed of as many layers of cellular integument and woody fibre as it is years old, the former being invariably external, and the latter internal in each layer; and every layer being formed beneath the previous one, and therefore next the wood. In consequence of the new bark being continually generated within that of the previous year, it is necessary that the latter, which is pushed outwards, should be extensible; and in many of the plants this extensibility takes place to a considerable degree. As there is a double layer of cellular integument and woody fibre formed every year, it follows that the age of a tree ought to be indicated by the number of such deposits contained in its bark. But the arrangement of the zones is so very soon disturbed, and the distinction between them becomes so imperfect, that even when the outermost coating is still entire, it is scarcely practicable to count the zones; and as soon as the outside begins to split or peel off, all traces of their full number necessarily disappear. That the bark really increases by constant deposits of new matter between it and the wood, is demonstrated by introducing a piece of metal in the liber of a tree, and watching it subsequently; in process of time it will be protruded to the outside, and finally fall away. Notwithstanding the fibrous character of a certain portion of the bark, it is generally so brittle as to be capable of breaking in all directions with a clean fracture, as soon as it becomes dry and ceases to live; but in many plants, when young, it is so tough as to be applied to different economical purposes. For instance, the Russia mats of commerce are prepared from the liber of two or three species of *Silea*, that of many *Malvaceæ* is manufactured into cordage, and similar properties are found in that of many other plants. When stems are old, the bark usually bears but a small proportion to the thickness of the wood, yet in some plants its dimensions are of a remarkable magnitude. For instance, *Pinus Douglasii* specimens have been brought to Europe twelve inches thick, and these are said to be not of the largest size.

Beneath the bark and above the wood is interposed in the spring a mucous viscid layer, which when highly magnified is found to consist of numerous minute transparent granules, and to exhibit faint traces of a delicate cellular organization. This secre-

tion is named the *Cambium*, and appears to be exuded both by the bark and wood, certainly by the latter. The cellular system of the pith and that of the bark are, in the embryo and youngest shoots, in contact; but the vascular system, as it forms, gradually interposes between them, till after a few weeks they are distinctly separated, and in very aged trunks sometimes they are divided by a space of several feet; that is to say by half the diameter of the wood. But whatever may be the distance between them, a horizontal communication of the most perfect kind continues to be kept up. When the vascular system is first insinuated into the cellular system, dividing the pith and the bark, it does not completely separate them, but pushes aside a quantity of cellular tissue, pressing it tightly into thin, vertical, radiating plates; as the vascular system extends, these plates increase outwardly, continuing to maintain the connection between the centre and the circumference. Botanists call them MEDULLARY RAYS; and carpenters the SILVER GRAIN. In horizontal sections of an exogenous stem, they are seen as fine lines radiating from the centre to the circumference; in longitudinal sections they give that glancing satiny lustre which is in all discoverable, and which gives to some, such as the Plane and Sycamore, a character of remarkable beauty.

The vascular system is confined to the space between the pith and bark, where it chiefly consists of ducts and woody fibre collected into compact, wedge-shaped, vertical plates, the edges of which rest on the pith and bark, and the sides of which are in contact with the medullary rays (fig. 5, a). The vascular system of a stem one year old consists of a zone of wood lying between the pith and the bark, lined on the inside by the medullary sheath, and separated into wedge-shaped vertical plates by the medullary rays that pass through it. All that part of the first zone which is on the outside of the medullary sheath is composed of woody fibre and ducts intermixed in no apparent order; but the ducts are generally in greater abundance next the medullary sheath, or confined to that side of the zone, and the woody fibre alone forms a compact mass on the outside. The second year another zone is formed on the outside of the first, with which it agrees exactly in structure, except that there is no medullary sheath; the third year a third zone is formed on the outside of the second, in all respects like it; and so on one zone

being deposited each year as long as the plant continues to live. As each new zone is formed over that of the previous year, the latter undergoes no alteration of structure when once formed ; wood is not subject to distension by a force beneath it as the bark is, but, whatever may be the first arrangement or direction of its tissues, such they remain to the end of its life. The formation of the wood is therefore the reverse of that of the bark ; the latter increasing by addition to its inside, the former by successive deposits upon its outside. It is for this reason that stems of this kind are called exogenous (from two Greek words, as we mentioned before, signifying to grow outwardly). According to M. Dutrochet, each zone of wood is in these plants separated from its neighbor, by a layer of cellular tissue, forming part of the system of the pith and bark. After wood has arrived at the age of a few years, or even sometimes sooner, it acquires a color different from that which it first possessed when deposited, becoming what is called HEART WOOD OR DURAMEN. For instance, in the beech it becomes light brown, in the oak deep brown, in Brazil wood and Guiaecum green, and in ebony black. In all it was originally colorless, and owes its different tints to matter deposited at first in the ducts, and subsequently in all parts of the tissue. That part of the wood in which no coloring matter is yet deposited, and consequently that which being last formed is interposed between the bark and duramen is called ALBURNUM ; a distinction between the two physiologically important. As each of these zones is the result of a single year's growth, it should follow that to count the zones would be to determine the age of the individual under examination ; this, however, is a nice and difficult operation, and has occasioned much dispute ; judging from fragments, the diameter of the stem being known, is almost always sure of leading to erroneous results, so that when we hear of the Baobab trees of Senegal being 5150 years old, as computed by Adanson, and others still more aged, it is impossible to avoid suspecting that some errors have vitiated the calculations. This same natural division is also called DICOTYLEDONOUS, because the embryo has two seed leaves or cotyledons. Such plants may generally be recognized by their leaves having *netted veins* ; so that it is neither necessary to watch the stem as it grows, nor to examine the seed under a microscope in order to count the cotyledons, to see whether it be exogenous or not ;

for the very obvious arrangement of the veins in the leaves reveals the secret structure of the stem.

Plants of an arborescent habit having the endogenous structure are mostly natives of the tropics. In them the vascular and cellular systems are as distinct as in the exogenous, but differently arranged. The cellular system, instead of being distinguishable into pith, bark, and medullary rays, is a uniform mass, in which the vascular system lies embedded in the form of thick fibres; and has itself no tendency to collect into zones or wedges resembling wood, but in all cases retains the form of bundles resembling fibres. These bundles consist of woody fibre enclosing spiral vessels or ducts; most commonly the latter. The diameter of an endogenous (literally inside growing) stem is increased by the constant addition of fibrous bundles to the centre, whence the name. These bundles displace such as are previously formed, pushing them outwards; so that the centre being always the most newly formed, is the softest; and the outside being older, and being gradually rendered more and more compact by the pressure exercised upon the bundles lying next it by those forming in the centre, is always the hardest. In endogenous plants that attain a considerable age, such as many palms, this operation goes on till the outside becomes sometimes hard enough to resist the blow of a hatchet. It does not, however, appear that each successive bundle of fibres passes exactly down the centre, or that there is even much regularity in the manner in which they are arranged in that part; it is only certain that it is about the centre that they descend, and that on the outside no new formation takes place. Its epidermis seems capable of very little extension, and in most plants of this kind the diameter of the stem is the same, or not very widely different, at the period in which it was first formed and when it has arrived at its greatest age; palms are in particular an instance of this; whence the cylindrical form is so common among them.

As endogenous stems contain no concentric zones, there is nothing in their internal structure to indicate age. In the grasses the stem is hollow, except at the nodi, where transverse partitions intercept the cavity, dividing it into many cells. In the bamboo these cells and partitions are so large that, as is well known, lengths of that plant are used as cases to contain pa-

pers. In consequence of this great apparent deviation from the usual structure, a celebrated Swedish botanist has remarked, that grasses are the least endogenous of all endogenous plants. But if the gradual development of a grass be attentively observed, it will be found that the stem was originally solid; that it then becomes hollow in consequence of its increasing in diameter more rapidly than new tissue can be formed; and that finally in old arborescent stems it again becomes solid by the constant addition of new matter to its inside; so that its deviation from the ordinary characters of endogenous structure is much less considerable than it seems to be at first sight. The embryo, of all plants that have these kind of stems, bears only a single cotyledon or seed leaf, and hence endogens are called MONOCOTYLEDONOUS PLANTS. Parallel veined or nerved leaves are also characteristic of this kind of plant Fig. 8, Section of a woody stem of three years' growth, i, h, first year's growth and hardest part of the wood; h, g, second year's growth; g, b, third year's growth or sap wood formed from the cambium; a b is the bark, b i, the wood; i k, the pith; a e, cuticle, or disorganized part of the bark; e d, cellular integument; d b, cortex; j e, medullary rays. Fig. 7, A palm, a b, woody fibre most dense and hard; b c, less numerous and compact; c d, very few, mostly cellular tissue. The small figures a a, are the natural size; the large ones, B B, much magnified to show the structure.

(Modified from Lindley.)

LOMBARDY POPLARS.—These beautiful trees are easily propagated, and simply by thrusting the limbs of healthy trees into the soil in the early spring, or late in fall. We have many now in a very vigorous state, propagated in this way. The Balm of Gilead, and the various kinds of willow, require only to be stuck into the soil to insure a successful growth. The soil need not be over moist.

Influence of Light.

THAT light exerts a wonderful and important influence on the growth and prosperity of plants, is a fact that has the undoubted assent of all observers ; even the sunbeams have been termed the nerves of plants. Light is composed of three rays, red, yellow, and blue, and color is produced from the partial absorption of one or two of these ; the ray thrown back, and not the one received, is the cause of the apparent color, so that all objects in reality are disguised by the dress we see them in. This will be more closely seen by considering that we are all in error, as a general rule, in relation to the color of the negro race ; their skin absorbs all the rays, and throws none of them back, and as the union of these rays is white, so in consequence must that be their real color ; by reversing this process of reasoning, a white man will become a black one. Like all other organized bodies in which the vital principle is operating, plants require a stated season of repose—this season is called their sleep. Both leaves and flowers usually change their position as soon as it is dark ; in many plants the leaves drop, in others they close, as well as the petals, and nearly all open with the earliest rays of the morning sun ; some of the upper-ten-thousand who do not obey this rule, can be seen in the Dial, page 33. The direct rays of the sun are necessary to enable plants to decompose carbonic acid gas in any great quantity ; the carbon retained by the plant is the cause of its green color. Monsieur Sennebier is of opinion that this carbon is not black, but of a dark blue color. The cellular tissue of plants is of a yellowish white ; consequently when these minute particles are lodged within the yellow cells, the combination of the two colors produces green, in which the blue or yellow tint prevails in proportion as the carbon or cellular tissue predominates, which well accounts for the pale delicate tint of the spring verdure, when but a small quantity of carbon has been deposi-

ted in the leaves, and the deeper shades which plants acquire in the autumn and summer, when they have accumulated a greater stock. The variety of colors at the fall of the leaf which is presented to us, Macaire supposed was owing to the absorption of oxygen, which thus produced various colored rusts, and to which also the different colors of flowers he thinks may be likewise attributed. Humboldt met with some green plants growing in complete darkness, at the bottom of one of the mines of Freuberg, which he attributed to the presence of hydrogen, which abounded in the mine. Another effect of the intensity of light is to make plants remarkably hard and firm in their texture, owing to the vigor they receive from its influence, but it also makes them of smaller dimensions. In hot climates, both causes, heat and light, operate and produce the remarkable results we have often noticed with wonder. Plants deprived of these genial influences are strangely altered in every respect. The celebrated Dr. Robinson, of Edinburgh, gives an account of a plant found in the drain of a coal work under ground, which was very luxuriant, with large indented foliage and perfectly white. He had never seen anything like it, nor could any one inform him what it was. He had the plant with a sod brought to the open air in the light, when in a little time the leaves withered, and soon after new leaves began to spring up of a green color, and different shape from the old ones. On rolling one of them between his fingers he found that it had the smell of common tansy, and it ultimately proved to be that plant, which had been so changed by growing in the dark; indeed it was recollect ed that some soil had been taken into a drain from a neighboring garden, some time before it was found so altered. The Abbe Tassier ascertained by experiment, that the green color of vegetables may be produced by artificial light in the absence of the sun. Kept in the dark, plants become dropsical, and have both smell and flavor diminished; advantage has been taken of this circumstance to soften the smell of vegetables when too strong. That of celery is tempered by burying the stem in the ground and sheltering it from the light, while the leaves alone are suffered to appear above; these last have of course the usual green color and fulfil their necessary



Calendula officinalis. Marygold.

Cypressus sempervirens. Cypress.

Campanula pyramidalis. Bellflower.

Braun expressly for J. K. Hellman

functions, but the stem is perfectly white. Nature adopts the same plan in cabbages, by having sufficient leaves to cover up the inner and softer parts, to suit the refined palate of man. Endive is also artificially withered by covering it with tiles ; this softens its flavor, and preserves its leaves from the unpleasant and bitterish taste they have in their natural state. Potatoes, when sprouting in a dark cellar, throw out weak, slender branches, six, eight, and ten feet in length. We may find from all this, that a careful study of Nature's works will lead us to greater and more important results than we ever dreamed of when the study was first commenced, and is not only pleasant but extremely profitable.

Marygold.

HARK! hark! the lark at heaven's gate sings,
And Phœbus 'gins arise
His steeds to water at those springs,
On chaliced flowers that lies.
And winking MARY-BUDDES begin
To ope their golden eyes.
With every pretty thing that bin
My lady sweet arise!
Arise ! arise !

SHAKSPEARE.

THIS plant is in the class Syngenesia, order Polygamia Necessaria. Its generic characters are :—Receptacles, naked, flat; down, none; calyx, many-leaved, nearly equal; seeds of the disk membranaceous. Its specific character: seeds all boat form; muricated, bent in. It is an ornamental annual, a great favorite in our garden, bearing an orange colored flower from June to September. It is a native of Europe. Tyas remarks, that Madame Lebrun, in one of her charming pictures, has represented grief as a young man, pale and languishing; his head appears to be bowed down by the weight of a garland of marygolds. All the world knows this gilded flower, which has been made the emblem of INQUIETITUDE, or rather of that distress which is caused by uncertainty as to the

sentiments of the one we love with a peculiar affection. It continues in flower the whole of the year, hence its scientific name, *Calendula*. Its flowers open at nine o'clock in the morning, and close again at three o'clock in the afternoon. It is said, that like the *Heliotrope*, it always turns towards the sun, following his course from east to west. During the months of July and August, it emits small luminous sparks during the night. This quality it possesses in common with the *Nasturtium*, and many other flowers of the same color. On account of its being confounded with the African and French mary-golds, we shall give a description of these and point out the differences, following Phillips.

TAGETES ERECTA—AFRICAN MARYGOLD ; TAGETES PATULÀ—FRENCH MARYGOLD. The generic characters are :. calyx, tubular ; simple, five parted ; one leaved ; florets of the ray, persistent, generally fine. Egret, five erect awns. The generic name of these Mexican flowers is said to have been derived from Sages, a grandson of Jupiter, who first taught the science of augury and divination to the twelve nations of the Etrurians, who from hence, became so celebrated for their pretended knowledge of omens and incantations. But as Sages could not have taught the use of plants peculiar to lands the gods themselves had not visited, we think the name badly adapted, unless the Spaniards pretend that they were instructed through the arts of Sages, to seek for the precious metals in fields covered with these golden flowers ; and this will be as readily believed, as that the species called French Mary-golds, became first stained and marked with a dark red by the blood of the unhappy Mexicans, whom the insatiable Spaniards slew in their own peaceful fields. Mr. Pirolle tells us with a greater degree of probability, that these flowers were called Sagetes, from a Greek word, meaning principality, which shows the rank these flowers held in the garden. They were introduced into England as far back as 1573, and were called French Marygolds, from the seed being first brought from France. Gerard says, that it was first obtained when Charles, the first Emperor of Rome, made a famous conquest of Tunis. But as these plants do not grow naturally in Africa, we may conclude they were received in Spain from South

America about the time Charles returned from the coast of Africa ; and in compliment to that monarch for having given liberty to twenty-two thousand Christian slaves, they were called African Marygolds. Thunberg, who visited Japan about the year 1775, for the purpose of making discoveries in Botany, tells us that these plants are cultivated by these jealous and cautious islanders ; and Loureiro notices their cultivation in China, Cochin China, and many parts of India ; but he remarks, it is not indigenous to these countries. Hernandez mentions it as a native of Mexico, in his history of that country.

They are in the same class, but in a different order, with the Common Marygold, from which they also differ in not closing their petals at night. It is remarked by Linnæus, that the Marygold usually opens its petals about nine o'clock in the morning, and closes them again at three in the afternoon ; but it is probable, it depends more on the state of the atmosphere than upon the hour of the day. Keats says :

Open afresh your rounds of starry folds,
Ye ardent Marygolds ;
Dry up the moisture of your golden lids,
For great Apollo bids.

The African and French Marygolds usually begin to flower in July, and continue to give out a succession of blossoms until the branches are destroyed by frost ; on which account, they are considered rather an autumnal than a summer flower. When judiciously planted, they add considerably to the gaiety of the parterre during the later months of the year, the tall African Marygold forming a brilliant background to clumps of China Aster, or displaying its golden corollas amidst the evergreens of the shrubbery ; while the more richly painted petals of the French Marygold, is well calculated to contrast with the blue or purple stars of the Aster, since no plant displays a richer coloring of carmine and gold ; this flower sports considerably in varying its corolla, some being single, semi-double, quadruple or full as the Rose Centifolia ; whilst Flora seems to have given the petals as many changes as can be wrought in two gay colors,—one flower displaying petals of a rich car-

mine, slightly edged with gold ; others exhibiting yellow flowers, so fancifully striped or dashed with crimson, that it would be difficult to find two plants with flowers alike. These flowers have only their gaiety to recommend them, since their odor is more offensive than agreeable, and may be compared to those persons who depend more on their wardrobe than their conduct in making themselves agreeable ; we therefore present them as emblematical of **VULGAR MINDS**.

These showy annual flowers may be raised by sowing the seeds on a warm border in the open garden ; but the more certain method of procuring fine plants is to sow the seed in the beginning of April, upon a moderately hot bed, and when the plants are come up they should have sufficient air to prevent their being drawn up weakly. When about three inches high they should be transplanted to a second bed very moderately heated, covering them with mats to screen them from the sun and winds until they have acquired sufficient strength, observing to give them water in dry seasons. In May they will be ready for removal into the parterre ; and in doing this they should be taken up with a ball of earth about the roots, so as to check their growth as little as possible. Should the earth be dry about this time, it would be advisable to water the bed about an hour before the young plants are removed, so as to make the soil adhere. It is desirable to have a considerable number of them, as well as China Aster, in pots, as a reserve, to be plunged into any part of the grounds that may be deficient in autumnal flowers. The seeds should be collected, not only from the finest plants, but from the centre of flowers of the principal stems only. The varieties of the African Marygold are very subject to change ; so that unless the seeds are procured from the finest flowers, they are more apt to degenerate than the French, and Miller recommends that the seed should have a change of soil every second year, so as to keep the varieties in perfection.

Belonging to the same class and order as the common Marygold ; is a renowned plant, the generic name of which is **SILPHIUM**. It is found in the Southern, Western and Middle States, the Savannahs, prairies and mountain meadows of which present us with a gigantic race of vegetables somewhat

resembling Sunflowers or Marygolds ; but yet even on a cursory examination, so very plainly and distinctly marked as to render it impossible to mistake it for anything but itself. The calyx is peculiar, with spreading segments, quite broad and ending in short leafy appendages. The receptacle is covered with chaff, the seed flat, and somewhat heart-shaped. The flowers always yellow, with remarkably long and easily perceptible styles. Some species of it exude drops of transparent fragrant resin from the flower disk.

Cypress.

The CUPRESSUS SEMPERVIRENS—CYPRESS is in the class Monœcia, order Monodelphia. Its characters are:—male : calyx scale in ament ; corolla none ; anthers four ; sessile, without filaments. Female : calyx a strobile ; scale one flowered ; corolla none ; styles concave dots ; nut, angular. Specific characters :—leaves imbricate ; fronts quadrangular.

The mourful cypress rises round
Tapering from the burial grouud.

LUCAN.

This is an ornamental evergreen tree, and on account of its perpetual verdure as well as the imperishable nature of its wood, it has been in many nations considered as an emblem of *Immortality*, and therefore planted on the graves of the dead, and carried in funeral processions. It is said to last as long as stone itself ; and we have read that the doors of St. Peter's Church, at Rome, which had been formed of this material in the time of the great Constantine, were not at all injured by time, when taken down eleven hundred years afterwards, by Pope Eugenius, to be replaced by gates of brass.

It is the universal emblem of *mourning*, and is the funeral tree of the Eastern World from the Persian Gulf to the Caspian Sea. It is also dedicated to the dead from Mazanderan to Constantinople as well as to the utmost bounds of China's fruitful shores. The Greeks burned the remains of their heroes

in coffins of Cypress; and chests in which the Egyptian mummies are found are generally of this wood. Ovid gives a traditional account of the mournful origin of this tree. Cyparissas, son of Telephus, of Cea, was beloved by Apollo. Having killed the favorite stag of his friend, he grieved, pined, and dying was changed by Apollo into a cypress tree. Calmet describes it as a tall straight tree having bitter leaves. The shade and smell were said to be dangerous, and hence the Romans look on it as a fatal tree and used it at funerals. The wood is heavy, of a rather fragrant smell; not liable to be attacked by insects, and does not speedily decay. When the Turks plant it over the graves of departed friends they are careful to select the upright variety, as they suppose it to indicate that the soul of their friend has ascended to the regions of bliss.

Peace to the dust that in silence reposes
 Beneath the dark shades of cypress and yew;
 Let sprung deck the spot with earliest roses,
 And heaven wash their leaves with its holiest dew.

PIERPONT.

O'er ruined shrines and silent tombs
 The weeping cypress spreads its glooms
 In immortality of woe,
 Whilst other shrubs in gladness blow,
 And fling upon the passing wind
 Their liberal treasures unconfined.
 And well its dark and drooping leaf
 May image forth the gloom and grief
 Which, when we parted, gave reply
 From heaving heart and dewy eye.
 Then, lady, wear this wreath for me,
 Plucked from the faithful cypress tree.

We have some species in common use in the United States for timber trees. The **CUPRESSUS THUYOIDES—WHITE CEDAR**, is an evergreen, and looks somewhat like the funeral cypress; its cones are small and nearly spherical. The abundance with which it grows in mossy swamps often gives the names of Cedar Swamps to such morasses. Nuttall speaks of another important species, the **CUPRESSUS DISTICHA**, one of the largest of our American forest trees, which has been placed by Mirbel in a distinct genus called **SCHUBERTI**: it differs from all the other species in having some of its leaves regularly fall off.

We are told, however, that it is the branchlets and not the leaves which are deciduous, as the latter still remain attached to the former when they have fallen off. Like the other it grows in mossy swamps and is found from Delaware to Mexico. It is principally used for shingles to which it is well adapted. The well known cypress knees are branches from the roots, of a conical form, rising several feet above the surface, and remaining bare. We are told that it was a species of this genus which was selected by the earliest architects for the most sacred and magnificent of their buildings. Of Solomon's temple, which was built more than two thousand years before the time of CHRIST, it was said that the cedar of the house within was carved with knobs and flowers: all was cedar; there was no stone seen. Ancient shipping also was frequently built of this timber. No doubt that the qualities of strength and durability, coupled with the advantage of readily yielding to the tool, were among the reasons that induced the early builders to select it. Besides this, it was then in many places more plentiful and larger than any timber which could be procured. We are told that now even in their own native soils they are scarcely more abundant than in England. The mountains of Lebanon have still a few cedars, and these are of great size; thirty-six feet, or more, in circumference.

"The cedars wave on Lebanon,
But Judah's statelier maids are gone."

There is a peculiar character and air, says a writer, in the masses of foliage belonging to this tree—a sort of flaky structure; the branches having a flattish form, and these lying in a level direction over each other, give it an appearance which none can mistake when they have once seen it. When it has attained its full size, and is in its prime, it is the most majestic of trees.

Red o'er the forest peers the setting sun,
The line of yellow light dies fast away
That crowned the eastern copse; and chill and dun
Falls on the moor the brief November day.

Now the tired hunter winds a parting note,
And echo bids good night from every glade;
Yet wait awhile, and see the calm leaves float,
Each to his rest beneath that parent shade.

How like decaying life they seem to glide,
And yet no second spring have they in store;
But where they fall, forgotten to abide
Is all their portion, and they ask no more.

KEBBE.

Bell Flowers.

LINDBLEY observes, that the modest beauty of the Bell flowers amply recompenses us for the absence of the gaudy scented and often venomous flowers of more southern climates; and that in this plant we find a representative of an extensive natural order, the species of which are scattered over all Europe, and the cooler parts of Asia and America, dwelling in dells and dingles, by the banks of rivers, in shady groves on the sides of mountains, and even on the summit of the lower Alps, where the last lingering traces of vegetation struggle with an atmosphere, that neither plant nor animal can well endure. We know the Harebell tribe only in its humblest state, bedecked with no other ornament than a few purple or nodding flowers; but in foreign countries it acquires a far more striking appearance. On the mountains of Switzerland, there are species with corollas of pale yellow, spotted with black; on the Alps of India, are others of the deepest purple that can be conceived; on the rocks of Madeira, lives one which was formerly not uncommon in our gardens, whose corollas are of a rich golden yellow; and finally, in the pastures of the Cape of Good Hope, are Roellas, the flowers of which are elegantly banded with streaks of violet or rose, passing into white. In every grassy lane there grows a diminutive herb with little grassy leaves, and a few bell-shaped nodding flowers; this is the real HAREBELL—*CAMPANULA ROTUNDIFOLIA*. Some will wonder why it is so called since its leaves are narrow like those of a grass; but if pulled up by the roots, the lowest of all the leaves will be found to have a roundish outline, from which circumstance it derives its name. The calyx of the plant has five deep divisions, which

spread regularly away from the base of the corolla, and from the top of the ovary. The corolla has very regularly the figure of a bell, except that it is too narrow at the base ; its border is divided into five lobes, which show that it is made up of five petals, and it is veined in a pretty and peculiar manner. From the base of the corolla, and consequently from the summit of the ovary, spring five stamens whose filaments are broad, firm, and fringed, curving inwards at the base, and bending over the top of the ovary, as if to guard it from injury ; their points touch the style and keep the anthers parallel and in contact with it till they shivel up and fall back, which happens immediately after the flower unfolds. The style is a stiff taper column about the length of the corolla and longer than the stamens. It is covered all over up to the very tips of the stigma with stiff hairs, which Nature has provided to sweep the pollen out the cells of the anthers, as the style passes through them in lengthening ; if it were not for this simple but effectual contrivance, as the anthers burst as soon as ever the corolla opens, their pollen would drop out of the nodding flowers and be lost before the stigma was exposed and ready to receive the fertilizing influence ; the hands of the style catch the pollen and keep it till insects, wind, or accident brush it down upon the inverted stigmas. The ovary is a case containing three cavities or cells surrounding a central axis ; in each cell there is a large fleshy receptacle over which is spread a multitude of ovules. After the stigma is fertilized, the corolla and the stamens drop off, the sepals harden, enlarge, and collapse, all the parts become browner and thicker, stout ribs appear in the substance of the ovary which droops still more than the flower itself, and at last a general dryness, hardness, and brownness, announce that the ripening of the fruit is accomplished. But how are dust-like seeds ever to find their way out of this lidless box, or to penetrate its tough sides ? Considering what happens in so many other plants, we should naturally expect that it would take place by a separation of the edges of the three carpels, into valves near their points ; but upon looking at the top of the ovary between the sepals, we find that part still tougher than the sides, and without the slightest appearance of an opening. It is by a rending of the

thinnest parts of the sides of the fruit, in the fork of the three principal ribs, that these valves are produced, and that nature provides for the escape of the seeds ; the rending takes place upon the final drying of the sides of the fruit, when every part becomes stretched so tight that any weak portion must of necessity give way. As the stretching takes place with uniformity, and as the skin at the forks of the ribs is always more tender than any other part, the opening of the valves will, consequently, occur with the same invariable certainty as the formation of the seeds. The whole tribe is as harmless as it is beautiful ; the roots of some species are eaten under the name of Rampion, the leaves of others are used in salads, and the bells afford an abundant supply of honey to the bee. The stems and roots abound in a milky juice, which, though in this case innoxious, is usually a symptom of poisonous properties, and which in the neighboring lobelia tribe, indicates the presence of the most fearful venom. The Harebell is an herbaceous and deciduous plant, perennial in its duration, and propagated by seed. It has a round, small, erect stem, bearing one or more flowers. It frequents damp rocky woods, and flowers in June and July.

“ Blue-Bell ! how gaily art thou drest,
How sweet and trim art thou, sweet flower ;
How silky is the azure vest,
How fresh to flaunt at morning’s hour.”

Tyas tells us that this beautiful flower, from the richness of its color, has been made the emblem of **CONSTANCY**.

This genus is in the class, Pentandria ; order, Monogynia and the name of Campanula, which signifies a little bell has been given to it from the resemblance which the corollas of its species bear to that instrument ; its characters are : calyx, generally five cleft. Corolla bell-form, closed by valves at bottom bearing the stamens. Stigmas three to five cleft. Capsules corresponding three to five celled. **CAMPANULA PERSICIFOLIA** —**PEACH-LEAVED BELL-FLOWER**, which is, according to Phillips, from whom we take the description and cultivation of the remainder, frequently called the Paper-flower, from the delicate yet stiff texture of the corollas, ranks among the most

ancient ornaments of the English parterres. Gerard, one of their writers, said in 1597 :—It is planted in our gardens, but does not grow wild in England ; and a French book claims its nativity in France. It was first cultivated in its double state about the middle of the last century, and since then, has deservedly attracted the attention of all good florists ; for although we lose the graceful bell-shape of the flower in its natural state, its cylindrical stalks of snowy or azure rosette flowers form most beautiful bouquets, from the end of June to the beginning of September. It loves a light and fresh loamy soil and a sunny exposure ; and is propagated by parting the roots in autumn.

CAMPANULA MEDIUM—CANTERBURY BELL ; though formerly considered a native of England, it is not now allowed that claim. It was formerly known under many names, applicable to its supposed virtues in curing swellings and inflammations of the throat. Of this species there are varieties with blue, purple, white, and striped flowers, both single and double. It is biennial, and decays after having matured its seed. It is raised by sowing the seed on a common border in the spring of the year ; and it should be transplanted when of a proper size into other beds, and in the autumn it may be removed to spots where it is intended to flower the following year. These flowers are large and branching, and therefore better calculated to embellish the shrubbery than to mix in the borders of choice flowers. The French distinguish the species by the name of **BELL**, **LITTLE BELL**, and **OUR LADY'S GLOVES**.

CAMPANULA PYRAMIDALIS—PYRAMidal BELL-FLOWER ; this is an ornamental, perennial, deciduous, herbaceous plant, bearing a pretty pale blue flower in July and September. The leaves are smooth, ovate, cordate, cartilagenous serrated ; the caudine leaves, lanceolate. The stem upright, elongated, and branched. Peduncles, three flowered. This plant, as its name implies, bears its bells on tall pyramidal branches, rising from the flower border, like a Chinese pagoda amongst more humble buildings. It is a magnificent plant when in full flower, and is frequently employed by country people to decorate their windows, as it is sufficiently pliable to accommodate

itself to any shape ; sometimes bending its branches round like a hoop, forming a complete circle ; at others, taking a fan shape, so as to serve as a blind either to the window, or to the rustic grate of a country parlor.

So did the maidens with their various flowers,
Deck up their windows and make neat their bowers.

We have sometimes seen its branches trained over hoops so as to form a complete globe, which is an ingenious device ; but Nature has formed this plant so peculiarly graceful, that to attempt to mend it is only to add deformity. This species is biennial, and grows naturally in some parts of France, Savoy, and Carniola. It is usually increased by offsets, but those raised from seed produce the tallest plants, and give the greatest number of flowers. The seed should be sown in the autumn in pots or boxes, filled with light unmanured earth, and placed in the open air until the frost or hard rains come on, when they should be removed under cover of a frame, always giving them free air when the weather will admit. The young plants will appear in the spring, when the pots should be placed in a warm situation until the summer, at which time they should be situated so as to receive only the morning sun. About September, they may be transplanted into a border of light sandy soil, without any mixture of manure, which is fatal to these plants, as is too much moisture. They will require the protection of hoops covered with oiled paper or matting, to screen them from severe frosts. In this bed they are to remain two years before being planted for flowering. On account of its susceptibility to culture, it has been made the emblem of **GRATITUDE**.

CAMPANULA SPECULUM—**VENUS' LOOKING-GLASS** ; this is an ornamented green-house annual, bearing a pretty purple flower in July and August. It has a prostrate stem. The flower-stalks very long, coming out at the angle formed by the leaf and stem, solitary, and bearing one flower, which has a salver-shaped corolla. There is an ancient fable which tells us, that Venus accidentally let one of her mirrors fall on the earth. A shepherd found it, and casting his eyes upon the glass, which had the power of adorning the object it reflected, he forgot his mistress, and had no other wish than to admire

himself. Love, who feared the consequences of so foolish an error, broke the glass and transformed the remains into this pretty plant, from which circumstance, as well as from the corollas reflecting the rays of the sun, occasioned its name; although some think this title was bestowed upon it on account of the glossy nature of its seed. It is made the emblem of REFLECTION as well as of FLATTERY. It varies in color from a fine violet, to a blue, and sometimes a white. Towards the evening the corollas fold up into a pentagonal figure, enclosing the parts of fructification, and securing them from the damp air until they are again opened by the rays of Aurora. From the shape of the flower when thus folded, it has sometimes borne the name of VIOLA PENTAGONIA. It grows naturally amongst the corn in the southern countries of Europe. It is a great ornament to the parterre, particularly when sown in large patches on sloping banks. Though seldom over from six to twelve in height, its spreading branches completely cover the earth, presenting a mass of beauty by its mirrors, not exceeded by any of the humble plants which expand the petals to the sun of summer. The shining seed should be sown in the autumn, on a dry soil, to produce early flowers, and the spring sowing will succeed them so as to prolong the enjoyment of these agreeable little flatterers.

THE HAREBELL.

BY CAROLINE SYMONDS.

In Spring's green lap there blooms a flower
Whose cup imbibes each vernal shower,
That sips fresh Nature's balmy dew,
Clad in its sweetest, purest blue;
Yet shines the ruddy eye of morning,
The shaggy woods' brown shade adorning,
Simplest flow'ret! Child of May!
Though hid from the broad eye of day,
Doomed in the shade thy sweets to shed,
Unnoticed droop thy languid head;
Still, Nature's darling thou'l remain;
She feeds thee with her softest rain;
Fills each sweet bell with but honied tears,
With genial gales thy bosom cheers.
O, then unfold thy simple charms,
In yon deep thicket's sheltering arms,
Far from the fierce and sultry glare,

No heedless hand shall harm thee there ;
 Still, then, avoid the gaudy scene,
 The flaunting sun, the embroidered green,
 And bloom and fade with chaste reserve, unseen.

THE HAREBELL AND FOX-GLOVE

In a valley obscure, on a bank of green shade,
 A sweet little Harebell her dwelling had made
 Her roof was a Woodbine, that tastefully spread
 Its close woven tendrils, o'erarching her head :
 Her bed was of moss, that each morning made new ;
 She dined on a sunbeam, and supp'd on the dew :
 Her neighbor, the nightingale, sung her to rest,
 And care had ne'er planted a thorn in her breast.

One morning she saw, on the opposite side,
 A Fox-Glove, displaying his colors of pride :
 She gazed on his form, that in stateliness grew,
 And envied his height, and his brilliant hue ;
 She marked how the flow'rets all gave way before him,
 While they press'd round her dwelling with far less decorum :
 Dissatisfied, jealous, and peevish she grows,
 And the sight of this Fox-Glove destroys her repose.

She tires of her vesture, and swelling with spleen,
 Cries, " Ne'er such a dowdy blue mantle was seen !"
 Nor keeps to herself any longer her pain,
 But thus to a Primrose begins to complain :
 " I envy your mood, that can patient abide,
 " The respect paid that Fox-Glove, his airs and his pride ;
 " There you sit, still the same, with your colourless cheek ;
 " But you have no spirit—would I were as meek."

The Primrose, good humoured, replied, " If you knew
 " More about him—(remember, I'm older than you,
 " And, better instructed, can tell you his tale)
 " You'd envy him least of all flowers in the vale :
 " With all his fine airs and his dazzling show,
 " No blossom more baneful and odious can blow ;
 " And the reason that flow'rets before him give way
 " Is because they all hate him, and shrink from his sway :

" To stay near him long would be fading or death,
 " For he scatters a pest with his venomous breath ;
 " While the flowers that you fancy are crowding you there
 " Spring round you, delighted your converse to share :



Nymphaea Alba
Water Lily.
Drawn expressly for J. K. Welleran.

" His flame-color'd robe is imposing, 'tis true ;
" Yet, who likes it so well as your mantle of blue ?
" For we know that of innocence one is the vest ;
" The other the cloak of a treacherous breast .

" I see your surprise—but I know him full well,
" And have number'd his victims, as fading they fell ;
" He blighted twin Violets that under him lay,
" And poison'd a sister of mine the same day !"
The Primrose was silent—the Harebell, 'tis said,
Inclined for a moment her beautiful head ;
But quickly recovered her spirits, and then
Declared that she ne'er should feel envy again.

Water Lily.

This plant is in the class Polyandria; order Monogynia. The generic name is derived from Nymph, a Naiad of streams; its characters are calyx four, five or six leaved. Corolla many petalled: Berry, many celled, truncated. Specific characters:—Leaves cordate, quite entire: Lobes imbricated, rounded: calyx four leaved. This aquatic plant, observes Lindley, offers in its stem no precise character by which we may refer it either to the Endogens or Exogens. Its leaves, moreover, are referable as much to the type of the one as the other. Its flowers consist of about twenty-five thickish oblong leaves of a dazzling white color, and the five external ones more or less green at the back in representation of a calyx; these leaves grow gradually smaller and smaller toward the centre, till at last their points become callous and yellow; at length bear a pair of short anther lobes in the room of the yellow callosity; these again narrow into straps, having more perfect anthers at the points, and finally next the ovary, shorten and diminish, producing less perfect anthers. What we have called anther-bearing petals are obviously stamens. Do not suppose the Water Lily offers in this respect an exception to general rules; in all cases the stamens are nothing but contracted and altered petals provided with anthers; only in this instance the transition is gradual and apparent, in others it is too abrupt to be

perceived. The number of stamens is about fifty; but it is not fixed nor indeed easily ascertained. The ovary is in a curious state; instead of being altogether free or altogether united with the calyx, it has the lower floral leaves free from it, and the upper united with it, so that the anther-bearing petals or stamens grow from just below the stigmas. It has ten or eleven cells, the partitions of which are covered all over with oval and the same number of orange yellow stigmas, which spread away from the centre like the rays of a poppy head, to which they bear no resemblance. As the leaves and stems afford no satisfactory evidence of its being an Exogen or Endogen; we ascertain that fact from the manifest tendency of the number five in the flowers of this plant. Had the tendency been to four, the evidence would still have been inconclusive, for four does sometimes occur in flowers of Endogens, but five never. Without searching farther it might confidently be affirmed a polypelous Exogen; a conclusion confirmed by the seed which is a little dicotyledonous body lying in a bag on the outside of a quantity of farinaceous albumen. This plant has a curious conservatory provided for it by nature, without which it could not exist in our cold climate. It is never found but in deep waters which thus protect it from the severity of the frost. The roots creep through the muddy bottoms of ponds to a considerable extent. They are well known by the black contorted appearance they present; being about three or four inches in diameter. From these roots spring directly both the stalks of the leaves and flowers. The length of each varies with the depth of water from one foot to five or six, or even ten or sixteen; and both are perforated throughout by long tubes, which, containing air, serve to float them. The leaves swim on the surface, are nearly round, with a sinus extending to the centre, at the termination of which cleft the leaf stalk is inserted in the manner of a shield; on each side, the lobes are produced to acute points. The upper surface is a bright and glossy green, in this all the pores are situated; the lower surface somewhat reddish, having a multitude of radiating veins.

It has been remarked as one of the most noted examples of these plants which dedicate their beauty to the sun as its blos-

sons expand in bright weather, and in the middle of the day, only closing towards the evening; when they recline on the surface of the water or sink beneath it. The sinking of flowers under water at night, observes a botanist, having been denied, I have been careful to verify it in this species. The same circumstance has been recorded from the most remote antiquity. The stimulus of light which indeed acts evidently on other blossoms and leaves expands, and raises with peculiar force these splendid white flowers, that the pollen may reach the stigma uninjured; and when the stimulus ceases to act they close again, drooping by their weight to a certain depth. The roots have often been used as an emollient in medicine. When the mystery of fructification has been completed the flower sinks to the bottom, and in silence and solitude ripens its fruit; which is a large roundish, many celled berry, impressed with the marks of the petals and stamens and containing numerous seeds. It is a perennial plant which opens in beautiful and extremely odorous blossoms in the month of July. The fine odor has been often, but in vain, endeavored to be extracted from it, but without so far the slightest success. It is the emblem of Eloquence. Like as with ourselves in China and Japan, the ranks and ponds are generally covered with different species of this elegant genus whose large and beautiful blossoms are no less fragrant than handsome. The **BLUE LOTUS—NYMPHEA CERULEA**, grows in Egypt and in Cashmere and Persia, but not in Bengal, where are only seen the red and white, and hence is taken occasion to feign that the Lotus of Hindooostan was dyed crimson by the blood of Irva. In allusion perhaps to the world rising out of the waters, the eastern deities are frequently represented seated on a Lotus flower; a circumstance to which Sir William Jones, in his imitations of Hindoo odes, often elegantly adverts.

* Mark where transparent waters glide
Soft flowing o'er their tranquil bed;
There, cradled in the dimpling tide,
Nymphea rests her lovely head.
But conscious of the earliest beam,
She rises from her humid rest,
And sees reflected in the stream
The virgin whiteness of her breast.

Till the bright day star to the west
 Declines in Ocean's surge to lave;
 Then, folden in her modest vest,
 She slumbers in the rocking wave."

Yes, thou art day's own flower; for when he's fled,
 Sorrowing thou droop'st beneath the wave thy head,
 And watching, weeping through the livelong night,
 Look'st forth impatient for the dawning light,
 And, as it brightens into perfect day,
 Dost from the inmost fold thy breast display.

Oh! would that I, from earth's defilement free,
 Could bare my bosom to the light like thee!
 But ah! I feel within a blighting power,
 Marring each grace, like hidden worm the flower,
 And trembling, shrinking, gladly would I fly
 That "light of light," Jehovah's piercing eye.

Yet whither can I go? Oh! there's a wave
 Where he who weeps for sin his soul may lave;
 he re would I plunge, and sad, not hopeless, lie,
 Waiting the first fair day-spring from on high,
 Then glad emerging from the healing stream,
 Welcome, like thee sweet flower, the dawning beam.

Wood Sorrel.

THIS plant belongs to the class Decandria, order Pentagynia. The generic name is derived from *oxus*, sour, on account of the quality of its juice. Its characters are:—Calyx, five parted; petals five, often connected at the base; capsules five celled, five cornered, opening at the corners; seeds arilled. Specific characters:—Styles equal; leaflets in threes, obcordate, hirsute; root toothed. This is a bulbous perennial plant, much used for culinary purposes. The leaves are all radical, or spring direct from the root, and in threes; leafstalks long and slender, semicilindrical; leaflets inversely heart-shaped and hairy; flowerstalks round and hairy, with two opposite sharp floral leaves; sharp segments of the calyx, oblong in shape; petals oblong, white, striped with purple, yellowish at



Oxalis acetosella
Wood Sorrel.
Printed Expressly for J. K. Wetmore.



(Arum Maculatum)
Wake Robin.

Drawn expressly for J. K. Willmott.

base. This is very abundant by our roadsides and in the woods; its handsome white drooping flowers appear in May and June. This in England, vulgarly called cuckoo's bread, flowers very freely, about Easter, in that place. This pretty little plant, says Tyas, shuts its leaves, closes its corollas, and the flowers hang pendant and drooping from the stems at night. They seem to yield themselves to sleep; but at the first dawn of day we may say that they are filled with joy, for they throw back their leaves and expand their flowers, and we doubt not it is on this account peasants have said that they sung the praises of their Creator, and that they emblemize Joy. This plant is totally inodorous, but its grateful acid taste which proceeds from a juice abounding in every part, amply recompenses this want and makes it a favorite among cooks for salads; approaching nearly in this respect, that of taste, to the juice of lemons or the tartaric acid; it also closely resembles them both in its medical effects, being eminently useful as an anti-scorbutic, duretic, and refrigerant. A pleasant whey has been made by it with milk. Among other important uses this has long been celebrated in the composition of the essential salt of lemons which is made by mixing one part of oxalic acid with two parts of cream of Tartar, and is used to remove stains from linen.

Wake Robin.

THIS is a genus in the class Monoecia, order Polandria. Its characters are:—Spathe one leafed, cowled; spadix naked above; female, below; stamenious in the middle. Specific characters:—Leaves hastate, quite entire; spadix club-shaped. The tribe to which this belongs, according to Lindley, consist of stemless or long stemmed plants, whose internal structure is strictly that of Endogens, but whose leaves bear more resemblance to those of Exogens; it is, however, to be observed that the lobed figure of the leaves and their branched veining to which the resemblance is due, need not be confounded with

the netted veining of Exogens, because on Arum the veins are branched rather than netted, and are in a great measure destitute of the lateral, minute branchlets to which the peculiar appearance of Exogenous leaves is chiefly owing. Many of these have large, tuberous, under-ground stems, which, although acrid and even poisonous when raw, nevertheless, by slicing, washing and cooking, become fit for food, and are actually so employed, in England only in a few places or in times of scarcity, but in tropical countries as a common every-day esculent vegetable. Their foliage is generally more or less lobed, and sometimes very curiously; but is so much diversified that it can hardly be said to offer any certain mark of recognition. The great and striking feature of the natural order resides in the SPATHE, which we have before explained to be a leaf usually colored, but sometimes green, which is rolled up round a spike of flowers; in fact a sort of large bract; and the SPADIX, which is a fleshy spike, covered all over with flowers, and enclosed in a spathe. In all Araceous plants the flowers are collected upon a spadix and are enclosed in a spathe. The spathe, for example, is more than a foot sometime in diameter, forming a huge vegetable bell, of which the spadix would be the clapper if the spathe were not erect. It is often stained with the deepest and richest colors; and in some cases it is extended on one side into a long slender tail, very much like that of the calyx in the long tailed Birthwort. The spadix on the other hand is either covered all over with flowers, in which case it makes no unusual appearance, or it is naked at the point, and then assumes the strangest shapes, which sometimes moreover glow with all the colors of the spathe. Thus in the Dragon Arum it is a long purple horn, standing up and projecting from a large deep-purple spathe; in others it hangs down from the spathe, like a slender tail; and in some cases it is enlarged into a disgusting fungus, like livid excrescence. The COMMON SPOTTED ARUM, WAKE ROBIN—*ARUM MACULATUM*, gives a sufficiently correct idea of the structure of this tube. It has a smooth, erect, oblong spathe, green outside, whitish inside, and unrolling to unclose the point of the spadix, which children call the Lady riding in her coach. If the spadix is extracted, a long, soft, fleshy branch

will be found, the upper part of which is quite naked and the lower part covered with naked flowers. At the bottom stands several tiers of round ovaries; above them are placed two or three rows of abortive ovaries in the form of horned, pear-shaped bodies; then appears a crowd of stamens; and above these is again collected a small cluster of abortive ovaries. The ovaries are so many naked, fertile flowers; the stamens are each as naked, sterile flowers; and the inflorescence is, in strict technical language, a crowded monoecious spike, wrapped up in a large, leafy bract. The ovary is puckered and hollowed out at the apex for a stigma, and contains two ovules, growing from the side of a single cell. The stamen has a short, thick filament, with two round lobes placed obliquely on its end for an anther. The fruit ripens in the form of a spike of orange-colored, roundish berries, each of which contains a single seed, enclosing a monocotyledonous embryo, surrounded by farinaceous albumen. On one side of the embryo is a narrow slit, at the bottom of which lies the minute point or plumule which eventually becomes the new stem.

Pliny tells us that the leaves of the Arum were anciently used to preserve cheese, by covering it over with them. Wedelius is of opinion, that the **CHARA** which Cæsar's soldiers found abundantly about Dyrrachium, was this plant. Being reduced to straits for want of provisions, they mixed the roots with milk and made them into a sort of bread. This probably was the Italian Arum, the roots of which are considerably larger than those of England, and might certainly be eaten with safety after having their acrid nature destroyed by several waters. This species was formerly called Starch Wort, on account of the roots being employed to stiffen frills and ruffs, particularly in the time of Queen Elizabeth, when these ornaments were worn by gentlemen as well as ladies. They are also occasionally used for soap. It is from them, dried and powdered, that the French make a wash for the skin, which is esteemed a good and innocent cosmetic, and which sells for a high price under the name of Cypress powder. Sir Hans Sloane says, that a species of these plants is carefully cultivated in the West India plantations, principally for the sake of the leaves, which are boiled and eaten like spinach or cab-

bage ; they are also eaten after being baked in hot ashes. The natives of the South-Sea Islands bestow great pains on the culture of this root, by inundating the land at one time, and draining it dry at others, by means of ditches dug round the fields. Thus, says Phillips, we have another instance of the importance attached to the same plant, in one part of the world, which in others are utterly despised, and deemed by the illiterate, almost a curse to the land. It is little used in modern medical practice, though formerly highly extolled by the old medical writers.

' Oh ! wander not where Dragon Arnm showers
 Her baneful dews, and twines her purple flowers,
 Lest round thy neck she throw her snaring arn
 Sap thy life's blood, and riot on thy charms.
 Her shining berry as the ruby bright,
 Might please thy taste, and tempt thy eager sight ;
 Trust not this specious veil ; beneath its guise,
 In honied streams a fatal poison lies.'

So Vice allures with Virtue's pleasing song,
 And charms her victims with a siren's tongue."

Lucerne.

THIS plant is in the class Diadelphia, order Decandria. Its characters are :—Keel deflexed from banner ; legume spiral, compressed. Specific characters :—Peduncles racemed ; legumes loosely spirally twisted ; stipules entire ; leaflets obovate, oblong toothed. This is an agricultural perennial, bearing a blue colored flower in June and July. It is a native of the East, but naturalized in the United States. The generic name appears to come from the place of which it is a native, as it is said to have been carried to Greece during the expedition of Darius. Lucerne occupies the same ground for a long time, but when it forsakes it, it is forever. On this account, says Tyas, it has been made the emblem of LIFE. Nothing is more charming than a field of Lucerne in full flower. It

seems spread before our eyes like a carpet of green and violet. Cherished by the husbandman, it yields him an agreeable crop without much care, and when mowed, it springs up again.—The cattle rejoice at its appearance ; it is a favorite plant with the sheep ; and the goat receives it as a delicacy, while the horse also eats it with avidity. This precious gift may be said to be showered direct from heaven. We possess it without much trouble, enjoy it without reflection, and often without gratitude ; and frequently prefer to it a flower whose only merit is transient beauty.

We are told that although it affords more green food, it contains less nutriment in a single crop than red clover ; but this it fully compensates for by the fact of its growth being much quicker and bearing cutting at least twice as often. It thrives well in places one hundred miles north of New-York city, and stands cold weather even better than clover. Fifteen pounds of seed are required for the acre if drilled, and ten more if sown broad cast.

The authoress of the *Moral of Flowers* observes that the exquisite adaptation of scriptural imagery to the subject intended to be illustrated, must be apparent to the commonest observer. Is sublimity required ? “The heavens above, the earth beneath,” nay, even “things under the earth,” are put in requisition to give dignity to the subject ; and whilst imagination sinks under the accumulated grandeur of the figures employed, nothing seems strained, nothing out of place. In the same manner, when *paihos* is intended, what can exceed the touching propriety, if one may so speak, of the illustrations selected. What, for instance, can form a more mournful comment on man’s earthly history than the simile which compares him to grass, and his glory to the flowers of the field ? unless, indeed, we add to it the declaration of Job, “man that is born of a woman is of few days and full of trouble.”

'Twas not to tell of foes subdued,
Or battle spoils to bring,
Th' appointed herald daily stood
Before the Grecian king.

With solemn shout and trumpet's clang,
 Each morn this truth severe,
 "Remember thou art mortal," rang
 In royal Philip's ear.

And why? To ripen into deed
 Each high and lofty aim,
 And urge him on to win the meed,
 The meed of deathless fame.

This record of the olden days
 May useful hints supply;
 But say, what herald shall upraise
 For me the warning cry?

For I have deadlier foes to quell
 Than bow'd beneath Philip's spear,
 And realms he wot not of to win,
 Imperishably fair.

A blade of grass—a simple flower,
 Cull'd from the dewy lea;
 These, these shall speak with touching power
 Of "change and death" to me.

For if "stars teach as well as shine,"
 Not less these gems of earth,
 In budding bloom and pale decline,
 May pour instruction forth.

Come, then, and ever when I stray,
 Breathe still the solemn cry,
 'Man and his glory, what are they,
 Fragile as grass or flow'ret gay,
 Which blossoms but to die.'

Hollyhock.

THE ALTHEA ROSEA—HOLLYHOCK; is in the class Monadelphia, order Polyandria. The generic name is derived from the Greek, to cure, because it was supposed to be highly efficacious in medicine. Its characters are:—calyx, double, outer



Lucerne Medicago.
Hollyhock Althea.
Evening Primrose .. Enothera.

Drawn Expressly for J.K. Wellman.

six cleft; arils, many, one seeded. Specific characters:—leaves, sennate, angular. This is a deciduous, herbaceous plant, ornamental in its appearance, and biennial in its duration. The flowers, which appear from July to September, are red. The stem is upright and hairy; the leaves are cordate; five seven-angled, crenate, rugose. The flowers are axillary sessile.

Phillips remarks, that the cultivation of this magnificent Eastern plant is of great antiquity. Its noble size, majestic height, and splendid flowers, could not fail to attract the attention of the earliest collectors of exotic plants. The derivation of the English name of this flower may be traced to the Saxon language, the old name of Holyoak being the same as Holihee. Mortimer retains the old name of Holyocks for these plants, in his work on Husbandry, as late as the year 1707, wherein he says:—Holyocks far exceed Poppies for their durableness, and are very ornamental. The French, who consider this plant as a native of Syria, call it by several different names, ROSE TREMIERE, ROSE DE MER, ROSE DE DAMAS. In floral language, it is figured as the symbol of FECUNDITY, and its extreme fruitfulness seems to justify the device. These plants grow naturally in various eastern parts of the globe. It is common in China, from whence the seeds of the tall, as well as the dwarf Hollyhock, have been frequently received. Pliny speaks of this flower in the fourth chapter of his twenty-first book, where he describes it as a Rose growing on stalks like the mallow; and Miller says he received the seeds from Istria, where it was gathered in the fields; but these seeds produced single red flowers only, whereas from the seeds procured from Madras, he raised plants with double flowers, of many different colors. A late traveller in Africa says, that the Hollyhock is also a native of Marootzee country, where he found it growing wild among the rocks around Kurreechone; but these appear to have been only of a yellow color. Linnaeus ascribes it to Siberia, and we have, continues Phillips, at different times received seeds from all the various places where it grows naturally; we have not only procured all the varieties which these countries produce, but by bringing them to one spot together, so that the several kinds have been im-

pregnated by each other, we have procured a greater variety in their colors, than is to be found in any one country where it grows spontaneously. Many of the colors of these flowers have been changed by accidental circumstances ; and that the corollas become doubled by the art of cultivation, there can be no doubt in the mind of the florist, who has regarded the formation of the flower. Miller says, although the varieties of the Double Hollyhocks are not constant, yet where the seeds are carefully saved from the most double flowers, the greatest number of the plants will arise nearly the same as the plants from which they were taken, both as to their color and the fulness of their flowers, provided no plants with single or bad colors are permitted to grow near them. Therefore, as soon as any such appear, they should be removed from the good ones, that their farnia may not spread into other flowers, which would cause them to degenerate.

We have but few flowers that contribute more to the embellishment of our gardens than the Hollyhock, although their hardy nature and easy propagation have rendered them so common, that they are less regarded by the generality of florists than they deserve, since it yields to no flower for the grandeur and beauty of its appearance, as well as the great variety of its colors, which embraces all the shades of the Rose, from the palest blush to the deepest carmine ; and from a pure white the yellows are equally numerous, until they reach the richest orange, from which the color is carried on to a dark chesnut. Others are dyed of a pale reddish purple running up to a black. Their noble stalks, which resemble so many floral banners garnished with roses, render the Hollyhock particularly desirable for ornamenting the borders of plantations, and for giving gaiety to the shrubbery in the later season of the year, since it generally continues its succession of flowers until the frost warns the floral goddess to depart.

The florist who is possessed of taste, will not reject it because it so familiarly flourishes in the rustic gardens of the cottagers, as it will be found equally appropriate for the decoration of the most princely grounds, if properly dispersed and grouped, so as to give effect, and receive assistance from other plants ; for it readily displays its Eastern splendor, whilst many of the

exotic plants that are so eagerly sought after, show that they are

Bourne from their native genial airs away,
That scarcely can their tender bud display.

The tall Hollyhock is not adapted for the small parterre,—its aspiring height befits it for a noble situation, and it rises with a degree of dignity from amongst clumps of flowering shrubs, that is not excelled by any plant whatever. But to give full effect to this flower, they should be planted in clumps of from five to ten plants, according to the size of the grounds; and each of these clumps should be formed of one color, contriving to have a clump of the darkest colored flowers between two plantations of the paler colors. Where the grounds are very extensive, clumps of mixed varieties may be admitted, but these never tell so well in the perspective as a mass of a single color. It adds considerably to their beauty when they are so placed as to appear emerging from among dwarf shrubs, where the lower part of the stalks are obscured, care however should be taken not to plant them too near each other, as every stem of flowers should be seen distinct, and when they require support, they should each have a separate stake, for when several are pressed together, the flowers have not room to display their beauty, and they take a stiff and unnatural appearance, instead of that careless freedom which constitutes the beauty of all plants. Yet in this wild disorder art presides

Designs, corrects, and regulates the whole,
Herself the while unseen.

MASON.

The vulgar planter who has no idea of the beauty of perspective gardening, frequently plants his Hollyhocks in rows; this is one of the errors never seen in Nature, and has as bad an effect in the garden, as a straight line of Lombardy Poplars in a plantation, or a long rank of soldiers painted in a landscape picture. It may be planted so as to ornament the bounds of gardens, by forming clumps at the angles, and at irregular distances near the fence; so that they do not form a straight line, for such an arrangement would only make the limits of

the ground more conspicuous. For small gardens, or where the situation is much exposed to the winds, the dwarf Hollyhock is the most desirable ; and when some of these are planted in front of the taller kind, it adds considerably to the beauty of the group.

Considerable benefit would be received by those who keep hives of bees, by giving attention to the cultivation of this flower, since the late season at which it flowers gives the bees an opportunity to make a second season for collecting their sweets ; and when a wet or cold season has impoverished the hive, or brought sickness into the swarming community, these autumnal flowers will afford them relief, and give them strength to endure the winter, which is also considerably shortened by enabling them to subsist without falling on their store at too early a season.

The ancients attended their bees with so much care that the hives were conveyed in the night to distant spots, abounding with such plants as afforded the most honey, and surely it were easier to plant flowers for the bees than to take the bees to the flowers. These industrious insects have peculiar claims on the lower classes, since they stray into the grounds of the wealthy, where, without committing devastation or fraud, they obtain treasure for their master ; and are therefore a kind of licensed flock, which feed at freedom without the fear of giving offence or receiving imprisonment, for they neither break down fences nor transgress against the laws.

The Hollyhock is also likely to hold a higher rank in rural economy than that of feeding bees. For some years past, it has been known that a good strong cloth may be made from the fibrous bark of the flower stalks of this plant, and in the year 1821, about two hundred and eighty acres of land near Flint, in Wales, were planted with the common Hollyhock, with the view of converting the fibres of this plant into thread, similar to that of hemp or flax. In the process of manufacture, it was discovered that the plant yields a fine blue dye, equal in beauty and permanence, to the best indigo. This important discovery cannot fail of producing beneficial consequences, both in a commercial and agricultural point of view.

The receptacles containing the seed of these plants should be collected when ripe, in dry weather, and placed in situations where they will receive no damp during the winter; these are to be sown in early Spring, in beds of light earth, from which the young plants may be removed when they have six or eight leaves each, into nursery beds, placing them about twelve inches from each other, observing to water them should the season be dry, until the plants have taken root; they should be then kept free from weeds until October, when they may be planted where they are to remain. A method has sometimes been successful of sowing the seeds as soon as they are ripe in the autumn; and by planting them early in the spring, and thereby obtaining flowers a year sooner than could be procured from the spring sowing. The flower stalks of the choicest varieties of the Hollyhocks should be cut down to the earth when the beauty of the flowers is decayed, for if suffered to mature the seed, it frequently impoverishes the plant so much that they decay during the winter, and a single stalk of these emblems of Fecundity will yield sufficient seed for a large garden.

THE FLOWER GARDEN.

BY BARRY CORNWALL.

There the *rose* unveils
Her breast of beauty, and each delicate bud
O' the season comes in turn to bloom and perish,
But first of all the *violet*, with an eye
Blue as the midnight heavens; the frail *snow-drop*
Born of the breath of winter, and on his brow,
Fixed, like a pale and solitary star,
The languid *hyacinth*, and pale *primrose*,
And *daisy*, trodden down like modesty.
The *fox-glove*, in whose drooping bells the bee
Makes her sweet music; the *narcissus*, (named
From him who died of love,) the tangled *woodbine*,
Lilacs, and the flowering *limes*, and scented *thorns*,
And some from the voluptuous *June*,
Catch their perfumings.

Mosses.

Mosses, Lindley observes, are among the smallest plants with true leaves ; they are often so minute that the whole specimen, leaves, stem, fruit and all would escape the eye, if they did not grow in patches ; and they never, even in the largest kinds, exceed the height of a few inches. Nevertheless, they are organized in a manner far from incomplete, with the exception of air vessels and breathing pores. They are usually the first plants that show themselves on rocks, or walls, or barren places, where no other vegetation can establish itself; provided the air is damp they will flourish there, and in time lay the foundation of a bed of vegetable mould, in which the roots of grasses and other stronger plants may find support, till they in their turn have decayed and prepared the way for shrubs and trees. This is the usual order observed by Nature, in converting the face of rocks into vegetable mould, and Mosses thus perform the office of pioneers to larger plants, an office for which one would suppose their lilliputian size would have hardly qualified them. They are formed precisely upon the same plan as flowering plants, as far as the arrangement of their organs of vegetation. They have in all cases a stem or axis however minute, round which the leaves are arranged with the utmost symmetry ; they have parts that answer to seeds, enclosed in a case, and this case elevated on a stick, which arises from among the leaves. But beyond this, analogy ceases ; in all other points of structure, the Moss tribe is of the most singular nature. They are said to be in fruit when the stems are furnished with brown hollow cases, seated on a long stalk. The theca wears a long cap not unlike that of the Norman peasant women, with its high peak and long lappets, (see plate,) this part is called a **CALYPTRA** ; when young, it was rolled around the theca, so as completely to cover it like an extinguisher, but when the stalk of the theca lengthens, the calyptra is torn away from its support, and carried up upon the tip. After a certain time the calyptra drops off ; and then the theca is in the best state for examination. It is terminated

by a lid or OPERCULUM, which is thrown off when the spores or reproductive parts are fit to be dispersed. When thus spontaneously thrown off, a new and peculiar set of parts comes in view ; it will be found that the lid covered a kind of tuft of twisted hairs, which at first look as if they stopped up the mouth of the theca. But cutting it perpendicularly from the bottom to the top, will show by the sectional view thus obtained, that the hairs in reality arise from the rim of the theca in a single row ; these are the teeth of the fringe or PERISTOME ; the latter term designating the ring of hairs. The nature of this fringe varies in different genera, and in some it is entirely wanting. What office it may have to perform we can only guess ; it seems to be connected with the dispersion of the spores, and often acts in the most beautiful hygrometrical manner. Taking a theca when dry, and putting it in a damp place or in water, will cause its teeth to uncoil and disentangle themselves with a graceful and steady motion, very beautiful to observe. Inside the theca the spores are confined ; they lie there in a thin bag which is open at the upper end, and which surrounds a central column, called the COLUMELLA ; they are exceedingly minute. Accurate investigation of botanists has led to the discovery, that there is a minute and concealed system of organs, which in many cases, precedes the appearance of the theca. It has been thought that these organs represent pistles and anthers of an imperfect kind ; but this is somewhat doubtful. At the end of the shoots of some Mosses the leaves spread into a starry form, and become colored with brown. Amongst these lie a number of cylindrical whitish green bodies, which are transparent at the point and filled with a cloudy granular matter, which it is said they discharge with some degree of violence, and these are the supposed anthers. The second kind of apparatus is shown in the bosom of other leaves, shortly after the Mosses have begun to grow, a cluster of little greenish bodies, thickest at their lower end, tapering upwards into a slender pipe, and at last, expanding into a shallow cup. After a certain time, the pipe and cup, which by some are considered style and stigma, shrivel up, and the lower part or ovary, swells, acquires a stalk, and finally, changes to a theca.

Evening Primrose.

THE *OENOTHERAS BIENNIS*—EVENING PRIMROSE, is in the class Octandrea, order Monogynia. Its characters are:— Calyx four cleft tubular caducous; petals inserted on the calyx, four; stigma, four cleft; capsule correspondingly four celled; four valved. Seeds affixed to a central four-sided columella. Lindley observes, that in the meadows and woods of Europe, North America, and the colder parts of Asia, are found a great number of herbs which with a great accordance in their general appearance, agree also in this remarkable circumstance, that every one of the parts of the flower consists either of four pieces or of some number that may be divided by four. In South America, are many species of a similar nature, only that they are shrubs and much more richly colored. These are called the Evening Primrose tribe, because the charming yellow flower which unfolds its bosom to the evening sun, and drinks up the dews of night with its petals, rendering darkness as lovely as noonday, but which retires at the approach of the sun, rolling up its petals and carefully protecting its stamens and pistils from the glare of light, is one of the tribe; it might be called the owl of the vegetable world, only it is much more beautiful and delicate than that hard hearted enemy of mice. Taking the *OENOTHERA FRUCTICOSA*—SHUBBY EVENING PRIMROSE, one of our own beautiful little plants, but with an absurd name, for it is not a shrub. Let us examine it, as by doing so accurately with one of them there will be no after difficulty in recognising the rest. Its leaves are of a narrow figure, not unlike the head of a lance, and their veins disposed in a netted manner; it has therefore a stem which increases in size by the addition of matter to the outside of the wood; or in other words, it is Exogenous; the leaves do not grow opposite each other from opposite sides of the stem, but are placed one a little above the other so as to be alternate. The flowers are of a bright yellow, and are entirely different from any of those of the preceding tribes. In the first place, the calyx has a long

slender tube from the top of which arise two leaves, both turned the same way and notched at the point; it is in reality composed of *four* sepals, united at the base into a tube, but capable of being separated above the tube into four pieces, as may be easily seen on an attempt to divide it with the point of a pin. From the top of the tube of the calyx arise *four* petals, which are of a bright yellow, and rolled together, except at night, when the flowers are expanded. *Twice four* stamens spring from the top of the tube; each of which has a very long anther which swings by its middle from the summit of the filament, and sheds its pollen in such a way that it looks as if it were mixed with cobweb. If this pollen is magnified in a drop of water, each grain will be found three cornered, and held to its neighbor by excessively delicate threads; a peculiarity in the pollen rarely to be met with except in this tribe. The ovary is inferior, and is marked by *eight* (2×4) ribs, of which *four* are more prominent than the others: it contains *four* cavities, in each of which is a great many seeds. The style is a long slender body, rising within the tube of the calyx as high as the stamens, and then separating into *four* narrow stigmas. The fruit is a dry oval case, with *four* angles, opening into *four* pieces called valves. This tribe has little, with the exception of beauty, to render it interesting to mankind, for there is not a single species which possesses any useful property worth mentioning.

The Evening Primrose with us is vulgarly known by the name of Scabish; though how it acquired the name, it is difficult to understand, as the Scabious, of which some suppose this name is a corruption, has not the slightest affinity with the plant. Its stem is from four to six or seven feet high, rough, covered with hair, and branching. The leaves from the root provided with footstalks; those from the stem without any; both hairy, and slightly toothed on the margin:

You, Evening Primroses, when day has fled,
Open your pallid flowers, by dews and moonlight fed.

BARTON.

This flower is a native of North America, and was first sent from Virginia to Padua in the year 1619, and became

extensively known—was very much liked, and great pains were taken to naturalize it, so at the present time it grows wild in Europe. Its flowers generally burst open and expand between six and seven o'clock in the morning.

The Evening Primrose shuns the day,
Blossoms only to the western star
And loves its solitary ray.

LANGHORNE.

Phillips tells us that he has frequently stood over this plant to watch the expansion of its flowers, the petals of which are confined together by means of the calyx, the ends of which meet over the corolla, and clasp each other as by a hook. As the corolla swells in its confinement, the segments of the calyx separate at bottom and discover the primrose corolla, which appears to be gradually inflating with a gaseous fluid until it acquires sufficient expansive force to burst the hooks of the calyx. When its petals are thus freed they expand instantaneously to a cup shape, and in about half an hour after they progressively spread until they become quite flat; by the morning the flowers become flaccid, so that the impregnation must take place after sunset. It is made the emblem of INCONSTANCY, and is therefore seldom worn by the fair, excepting by those gay belles who love to coquette with and tease their smitten swains.

These biennial plants are raised by sowing the seeds in autumn, on a border, where they should remain until the following autumn, when they may be removed to situations in which they are intended to flower the following summer. In removing them care should be taken to avoid breaking the roots, which run deep into the ground. This common kind will grow in almost any soil or situations, but the Grandiflora, being more delicate, requires a south aspect and a light free earth.

ŒNOOTHERA ODORATA—SWEET SCENTED PRIMROSE, has such a delightful fragrance and hardy nature as to make it likely to succeed the other species, and banish them from the best gardens. It was first obtained from Patagonia. It proves to be a tolerably hardy perennial plant, growing freely in most

situations, and producing plants wherever the seed scatters itself. The stem does not die completely down, even in the open air; and when protected in a conservatory, it becomes an evergreen shrub, singular by its waved foliage, beautiful by its yellow blossoms, delightful for its perfume, and curious because its flowers only open

"When weary peasants, at the close of day,
Walk to their cots, and part upon the way;
When cattle slowly cross the shallow brook,
And shepherds pen their folds and rest upon their crook."

EVENING PRIMROSE.

"The sun his latest ray has shed,
The wild-bird to its nest has sped,
And buds that to the day-beam spread
Their brightest glow,
Incline their dew-besprinkled head
In slumber now.

Then why art thou lone vigils keeping,
Pale flower, when all besides are sleeping?
Are not the same soft zephyrs sweeping
Each slender stem,
And the same opiate dew-drops steeping
Both thee and them?

Eve is my noon—at this still hour
When softly sleeps each sister flower,
Sole watcher of the dusky bower
I joy to be,
And conscious feel the pale moon shower
Her light on me.

Soon as meek Evening veils the sky,
And wildly fresh her breeze flits by,
And on my breast the dew drops lie,
I feel to live,
And what is mine of fragrancy
I freely give.

Say, thou who thus dost question me,
Wouldst thou from earth's dull cares be free,
O listen, and I'll counsel thee
Wisely to shun
Tumult, and glare, and vanity,
As I have done.

'Enter thy closet, shut the door,'
And heavenward let thy spirit soar;
Then softer dews than bathe the flower,
 On thee shall rest,
And beams which sun nor moon can pour
 Illume thy breast."

Snap Dragon.

THE ANTIRRHINUM MAJUS—SNAP DRAGON, belongs to the class Didynamia, order Angiospermia. The generic name is derived from two Greek words, meaning against the nose; supposed by some to arise from an unpleasant odor emitted by one of the species; and by others, to the resemblance of the flower to the nose of a calf. Its characters are:—Calyx, five leaved; corolla, with the base produced downwards, and nectariferous; capsules, two celled. Specific characters:—Corollas, tailless; flowers in spikes; calyxes, rounded. This is an evergreen, ornamental perennial plant; bearing pink, sometime purplish red, often white flowers. The leaves are somewhat lance-shaped, and alternate, those of the branches being opposite. The flower, observes Phillips, is made the emblem of PRESUMPTION from its monopetalous corolla forming a mask, which resembles the face of an animal; and it has from hence received various names, as DOG'S MOUTH, LION'S SNAP, TOAD'S MOUTH, and SNAP DRAGON. On pressing the sides of this flower it opens like a gaping mouth, the stigma appearing to represent the tongue; on removing the pressure the lips of the corolla snap together, which has occasioned the last and most generally adopted name. It belongs to the family of the Toad Flax, and is a flower that we cannot examine without admiring how wonderfully it is adapted for the bleak situation in which it grows naturally, as on the highest rocks or out of the crevices of the most exposed cliffs or chinks of the loftiest towers: in all of these situations its parts of fructification are guarded against the tempest by the singularly shaped corolla, which defies either wind or rain to enter it until im-



Antirrhinum Majus.
Snap Dragon.

Drawn expressly for A. S. Wellman.

pregnancy has taken place, when the mask falls off to allow a free access of air to the seed vessel. We have frequently remarked that bees, and more particularly the humble-bees, have entered this flower by pressing open the lips, as if they were conscious that such an opening existed, although it shuts so close as to deceive the nicest eye, and snaps to the moment the insect has gained admittance, leaving it to revel unmolested within the mask, from which it makes its exit with the same ease as it entered. This species of instinct approaches near to reason, since the bee cannot have been trained or instructed to this habit.

This plant produces its flowers in a spike, but the whole of them fronting one way, which is generally to the sun; and as it gives out numerous branches, from two to three feet in height, it becomes highly ornamental, particularly amongst dwarf shrubs. The colors are numerous, consisting of all the shades of a rich orange and yellow down to white, with the same varieties in red and purple, and an endless change of party colors, the most esteemed of which is that with a gold colored throat and a dark crimson mouth and lips.

It grows naturally in the South of Europe; and as it is frequently found on the cliffs of Dover, is now classed as one of the native plants of England, although supposed not originally to have belonged to that soil.

These plants love a light soil and an open, sunny situation; but when transplanted into a rich and moist earth they produce larger flowers, though the plant generally dies in the winter, whilst those that grow on a dry or rocky soil continue several years. They are easily raised from seed, which should be sown in early spring; and it may be increased by cuttings, if planted during the winter months. When intended to ornament rock work the seeds should be scattered both in the autumn and in the spring, which will ensure a supply of plants without much farther trouble, and they are observed to endure the winter better in such situations than when growing in the borders of the garden; and on this as well as other accounts it should be considered rather a rustic than an elegant plant, and therefore should not be placed among choice flowers, but mixed with shrubs in the background, or placed on the banks or most

elevated parts of the grounds, where, in large clumps it produces a showy effect from the end of spring until autumn. The use of eating oil not being very general, checks the cultivation of these plants that could afford a good substitute for olive oil. Most of the continental European countries consume a great deal of oil, which they consider indispensable in their diet, and hence they seek plants whose seeds yield the best oil ; and in Russia the Snap Dragon is sown for the sake of the seeds, which produces by expression an oil little inferior to that obtained from olives.

ANTIRRHINUM LINARIA—**TOAD FLAX.** Specific characters are :—leaves, lanceolate, linear, crowded. Stem, erect. Spikes, terminal, sessile. Flowers, imbricate. This species is also a native of Europe, but so long naturalized in this country as to be considered by some indigenous. It is a well known and very common plant. The stem is smooth, generally rising to the height of two feet ; the leaves numerous, narrow, and pointed, and like the stem, quite smooth. The branches rise from the angle formed by the leaves and stem, and bear tufts of leaves. The spike is long, crowded with yellow flowers that so closely simulate the Snap-Dragon, as to render another description unnecessary. It is a perennial plant, flowering in July and August. The leaves have a bitterish and somewhat saltish taste, giving out when rubbed between the fingers, a smell that considerably resembles that emitted by the Elder. They are said to be diuretic and cathartic, in both of which to act powerfully, and consequently have been held in great repute, and much used in dropsies and other disorders requiring powerful evacuations. Dr. Wolpole, we are told, was the first physician who used it in hæmorrhoidal affections, and the ointment which he made with it, was eminently successful in curing and alleviating that painful disease, the piles. The Landgrave of Hesse, to whom he was physician, tried for a long time to induce him to discover the ingredients of his preparation which he had hitherto kept secret but could not prevail till the prince subdued his obstinacy by the promise of a fat ox annually.

ANTIRRHINUM CANADENSE—**CANADA SNAP DRAGON**, is a delicate plant, annual in its duration, and not often more than



Ilex aquifolium
Holly.

Printed in the U.S.A. by G.W. Hartman

from ten to fourteen inches in height. It has a straight, smooth stem. The leaves, small, scattered, and sharp. The flowers which are small and blue, are fixed on a loose terminal raceme. Scions covered with leaves, sometimes come out from the root. It is a very common plant, mostly found by the road-side, perhaps because driven from other places, and blooms in July and August.

Holly.

THE *ILEX AQUIFOLIUM*-HOLLY, is in the class, Tetrandria, order, Tetragynia ; the origin of the generic name is unknown. Its characters are :—calyx, four toothed ; corolla, wheel-shaped ; style, none ; berry, four seeded. Specific characters : leaves, ovate, acute, shining, spiny waved. Flowers, axillary, umbelled.

Some to the holly-hedge
Nestling repair, and to the thicket some ;
Some to the rude protection of the thorn.

THOMPSON.

This is an ornamental timber tree, bearing a white flower from May to June, followed by red berries which ripen late. The Holly leaf, a writer remarks, is one of the most singular in nature. By a remarkable contrivance, the points beneath the scollops of the leaf are made to answer the purpose of thorns pointing every way. It is, as it were, warped by the action of fire up and down or in and out at the edges, so that it is armed above and below, by those exceedingly sharp and penetrating needles. The stiff and almost horny substance of the leaf, hardened as it were at those extremities, enables it to resist many injuries from men and animals, who might otherwise wantonly destroy it.

The wood of this tree is exceedingly hard, solid, and heavy, and is worked by cabinet-makers and engravers on wood. Of the bark the best bird-lime is made ; both leaves and berries form a nutritious and grateful food for the deer and small birds

in winter; besides the ornament, its shining red berries afford contrasting with the lively green of its leaves; making it in more ways than one, a general favorite. Loudon tells us that the common Prickly Holly makes the best of all fences, whether we regard its qualities for defence, shelter, duration, or beauty. The plants are raised from the seeds which require the second year to sprout up after planting them; they are then transplanted in rows and as they grow, trimmed or shorn to suit the taste of each.

Tyas remarks, the providence of an all-wise Creator is shown in an admirable manner in this beautiful plant. The great Hollies which grow in the forest of Needwood, bear leaves bristling with thorns to the height of eight or ten feet, and above this height the leaves cease to be thorny. There the plant has no need to arm itself against enemies which cannot reach it. This tree, with its dazzling verdure, is the last ornament of our forests, when they are despoiled by the winter's frosts and chilling blasts; its berries serve as food for the little birds which remain with us through the inclement season of winter; and it also offers them a comfortable shelter amid its foliage.

In Jesse's Gleanings in Natural History, the eloquent author, speaking of the Holly, says,—The economy of trees, plants, and vegetables, is a curious subject of enquiry, and in all of them we may find the hand of a beneficent Creator. The same care which he has bestowed on his creatures is extended to plants. This is remarkably the case with respect to hollies: the edges of the leaves are provided with strong sharp spines, as high up as they are within the reach of cattle; above that height the leaves are generally smooth, the projecting spines being no longer necessary.

Dr. Southey has noticed this circumstance in the following pretty lines:—

O reader! hast thou ever stood to see
 The holly tree?
The eye that contemplates it well perceives
 Its glossy leaves;
Order'd by an intelligence so wise
 As might confound an atheist's sophistries,



Hemerocallis Flavæ.
Yellow Day Lily.

Drawn expressly for J.K. Wellman.

Below a circling fence its leaves are seen,
Wrinkled and keen ;
No grazing cattle through their prickly round
Can reach to wound ;
But, as they grow where nothing is to fear,
Smooth and unarm'd the countless leaves appear,

The **ILEX OPACA**—AMERICAN HOLLY is, as Bigelow remarks, the more interesting as it is one of the few evergreen trees which we possess which are not of the coniferous tribe. Its small flowers, of a greenish white, grow in bunches, coming out in the month of June, and are succeeded by the red berries, which fall very late.

Yellow Day Lily.

THE **HEMEROCALLIS FLAVA**—YELLOW DAY LILY, is in the class Hexandria, order Monogynia. Its generic characters are :—Corolla, six-parted, tube-shaped funnel form ; stamens declined ; stigmas small and simple. Specific characters :—Leaves broad-linear, keeled ; petals sharp, flat, with united nerves. This fragile beauty, observes Philips, is made the emblem of COQUETRY, because its flower seldom lasts a second day. The generic name is derived from two Greek words meaning beauty of a day, and hence the French name it **BELLE D'UN JOUR**. Tournefort called it **Lis-Asphodel**, because the plant has the root of an Asphodel and the flower of a Lily.

This species is a native of Hungary, Silesia, and the northern parts of China. Both the Yellow and the Copper-Colored Day Lilies are old inhabitants of the English gardens, since Gerards says, in 1596, these lilies grew in his garden, and also in the garden of herbarists and the lovers of fine and rare plants. This excellent old writer distinguishes these Lilies by the title of **Lilium non Bulbosum** ; the root being partly fibrous and partly tuberous, and not bulbous, like other Lilies. Parkinson writes on this flower under the name of **Liliasphe-**

delus, from its root resembling that of the Asphodel; and he tells us it grows naturally in many moist places in Germany.

This plant flowers in June, and although the blossoms are not durable they are followed by others in succession, so that the plant continues to display its beauty, and to give out its agreeable fragrance a considerable length of time, and more particularly so when planted in a moist soil, and somewhat shady situation. It is an admirable flower for the vase of the saloon, as its graceful corollas, being supported on an erect stem, show to peculiar advantage when towering above roses or lilies.

It is of a hardy nature and easy propagation, being increased by numerous offsets from the roots, which should be removed about every third year in the autumn, observing to keep them out of the earth as short a time as possible. It is also raised from the seed which, when sown in the autumn on an open bed, sends up young plants in the spring which generally flower the second year. These plants require considerable room for their roots to spread, and they make a fine appearance when in large clumps among flowering shrubs.

The *HEMEROCALLIS FULVA*—COPPER COLORED DAY LILY, frequently grows to the height of four feet, and is therefore better calculated to ornament the shrubbery than the parterre. It flowers in July and August; and although the corollas wither at the close of the same day on which they expand, yet the plant continues gay for nearly three weeks from the succession of flowers that follow each other daily. This species is a native of the Levant, and is found also in some parts of France. It requires the same plan of cultivation as the other, but in cold latitudes never ripens its seeds.

Lily of the Valley.

THE *CONVALLARIA MAJALIS*—LILY OF THE VALLEY, is in the class Hexandria, order Monogynia. The generic name is derived from Convallis, a valley. Its characters are:—Co-

rolla, six-cleft; berry-spotted, three celled. Specific characters: Flowers on a scape.

Sweet flower o' the valley wi' blossoms of snow,
And green leaves that turn the cauld blast from their stems;
Bright emblem of innocence, thy beauties I lo'e
Above the king's coronet encircled wi' gems.

There's nae tinsel ahint thee, to make thee mair bright
Sweet lily! thy loveliness a' is thine aim,
And thy bonny bells dangling sae pure and sae light
Proclaim thee the fairest o' flower's bright train.

J. L. S.

The flowery month of May, says Philips, produces no plant of more exquisite fragrance or more delicious form than the Lily of the Valley. In floral language it is made to represent a RETURN OF HAPPINESS, because it announces by its elegance and its odor the happy season of the year. The graceful manner in which the perfumed bells are suspended on the stem, and the agreeable contrast which their broad leaves of bright green afford to the snowy corollas could not escape the notice of the poets. Prior says:

Take but the humblest Lily of the field;
And if our pride will to our reason yield
It must by sure comparison be shown
That on the regal seat great David's son,
Arrayed in all his robes and types of power,
Shines with less glory than that simple flower.

This elegantly modest plant has had the name of Lily very improperly given it, as it has not the least affinity with the Lily in its root, fruit, or flower. We presume it was called Lily from the purity of its white corolla, for even at the present time, notwithstanding we have orange and scarlet Lilies, we attach an idea of delicacy to their very name. As it grows spontaneously in shady valleys it is natural to call it the Lily of the Valley.

The proper situation of this plant in the garden is its most rural and rustic part, where it is partially shaded by shrubs and trees; and it flowers even better in a north aspect than when fully exposed to the noonday sun. It will grow in almost

any earth, but produces most flowers in a loose, sandy soil, that is rather poor than otherwise ; for when planted in a rich cow-yard mould the roots spread and multiply rapidly, but the plants give but few flowers, and like most other creeping-rooted plants it seldom produces seed where it can propagate so readily by the nature of its roots. From the economy of nature, an observing gardener will be taught to transplant many kinds of his fruit trees into poorer soil when the richness of the earth forces the growth of the tree too rapidly to form its fruits.

The Lily of the Valley is a desirable creeper for the shady banks of lakes and ornamental streams, and we love to meet its grateful fragrance beneath the pendulous branches of the Weeping Willow. Autumn is the proper season for placing their perennial fibrous roots in the ground, where they should be covered with about two inches of earth, and not be disturbed oftener than every third or fourth year, as they seldom flower strongly or plentifully after being removed. The plants will require no other attention than that of keeping them free from weeds and thinning the roots about once in three or four years, according to the nature of the soil and increase of the plants.

It is one of the few flowers that will bear forcing in pots, and as but few plants are more agreeable in the house in the months of March and April, this mode of flowering the *Convallaria Majalis* should never be omitted when there is an opportunity of doing it; and we strongly recommend potting them for the market; for

Whoever a true epicure would be
May there find cheap and virtuous luxury.

COWLEY.

These plants are so numerous in the woods of Eileride, in the neighborhood of Hanover, that the ground in many places is completely covered with them, and the air scented for a considerable distance by their agreeable perfume. These woods are regularly visited on Whit Monday by numerous parties from Hanover, who go to gather these May-flowers; and the forest on that day is a scene of rural festivity and mirth. Cottages are erected for the sale of coffee, and other refreshments,

and neither the pleasures of tobacco nor the twirling of the waltz are omitted on that occasion. The roads leading to the forest are thronged by persons of all ages, from the earliest dawn to the closing of the day ; and few are the houses in the city of Hanover that are not furnished with the Whitesuntide Bouquet of the Lily of the Valley.

The flowers of this plant possess not only an agreeable odor, but also a fragrance that is highly medicinal against nervous affections, and many diseases of the head. The water distilled from these little corollas was formerly in such great repute that it was kept only in vessels of gold and silver, and hence called golden water. In Germany it is common to make a wine of these flowers by drying them in the summer, and in the time of the vintage mixing them with the grapes when pressed ; which wine they use for various purposes.

In the United States there are many species and varieties of the Convallaria ; they are all of an elegant and rather singular shape, which entitles them to a situation in the shady parts of our gardens, but more particularly so in the grove and amongst the shrubs in the wilderness walks ; they are all of the same easy propagation as the Lily of the Valley.

to the curious eye

A little monitor presents her page
Of choice instruction, with her snowy bells,
The Lily of the Vale. She nor affects
The public walks, nor gaze of midday sun;
She to no state or dignity aspires,
But silent and alone puts on her suit
And sheds her lasting perfume, but for which
We had not known there was a thing so sweet
Hid in the gloomy shade. So when the blast
Her sister tribes confounds, and to the earth
Stoops their high heads, that vainly were exposed
She feels it not, but flourishes anew
Still sheltered and secure.

Amaryllis.

THE AMARYLLIS FORMOSISSIMA—AMARYLLIS is in the class Hexandria, order Monogynia; the generic characters are:—corolla superior, unequal, six petalled. Filaments unequal, inserted in throat of tube. Specific characters: tube fringed; corolla nodding with a very ringent limb; stamens, included in the involute lower segment. This is an ornamental greenhouse perennial, bearing dark red flowers from May to August.

Pride was not made for men; a conscious sense
Of guilt, and folly, and their consciousness,
Destroys the claim, and to beholders tells
Here nothing but the shape of manhood dwells.

WALLER.

In floral language, the Amaryllis is made the emblem of PRIDE, and the beauty of this splendid genus of plants makes the name of Amaryllis very appropriate, as it appears to be derived from the Greek signifying splendor. Monsieur Pirolle translates it, *Le brille*, I shine, and perhaps we have no family of flowering plants, more beautifully gay than the Amaryllis. We have three well known species of this in the United States, one of which is native, and the other two, exotics.

THE AMARYLLIS ATAMASCO—ATAMASCO LILY, which is our indigenous species, has a two cleft sheath, and pedicillated flower. The corolla is bell shaped and erect, with stamens curved downwards archwise. The flowers, which are white and red, come out in June.

THE AMARYLLIS LUTEA—YELLOW AMARYLLIS is of a more hardy nature than most of the other species; it is frequently called the Autumnal Narcissus, or the Star Lily, and grows naturally in the south of France, Spain, Italy, and Theace. Phillips says it was brought to England at the time of Queen Elizabeth, as Gerard mentions the cultivation of it in his garden. It is a very desirable flower to contrast with the Purple Colchicum or Saffron Crocus of the autumn, as it usually continues in flower from the beginning of September



Amaryllis Amaryllis.
Convallaria Lily of the Valley.
Anemone Anemone.

Printed by G. & C. Merriam.

to the middle of November, provided it is not planted under the drip of trees or shrubs. It loves an open situation, and thrives best in a fresh light and dry soil ; it is perfectly hardy and increases very fast by its vivaporous nature. The season for transplanting the offset bulbs is from the end of May to the end of July, but not later, as they then begin to send out new fibres, and to disturb them after this time, will prevent their sending up flowers. Phillips recommends that the bulbs should not be taken out of the ground oftener than once in three or four years, as they will be found to produce stronger and more numerous flowers. This is also one of the flowers that may be planted so as to spring out of the turf in many situations, and will give a good effect to banks that surround pieces of water. Gardeners say the Amaryllis is a proud plant because it frequently refuses its flowers to their earnest cares, but when it does deign to come forth and show out its brilliant cherry red blossoms, the sun shines upon them and studs the whole with gems of gold, producing an effect that must be seen to be appreciated.

BEAUTY AND FRAGRANCE OF FLOWERS.

BY THOMPSON.

But who can paint
Like Nature ?—Can imagination boast,
Amid its gay creation, hues like hers
Or can it mix them with that matchless skill,
And lose them in each other, as appears
In ev'ry bud that blows ?
Along these blushing borders, bright with dew,
And in yon mingled wilderness of flowers,
Fair-handed Spring unbosoms every grace :
Throws out the snow-drop and the crocus first :
The daisy, primrose, violet, darkly blue,
And polyanthus of unnumber'd dyes ;
The yellow wall-flower, stain'd with iron brown :
And lavish stock, that scents the garden round ;
From the soft wing of vernal breezes shed,
Anemones, auriculas, enrich'd
With shining mear o'er all their velvet leaves ;
And full ranunculus of glowing red.

Then comes the tulip race, where beauty plays
 Her idle freaks, from family diffused
 To family, as flies the father-dust,
 The varied colors run, and while they break
 On the charm'd eye, the exulting florist marks,
 With secret pride, the wonders of his hand.
 No gradual bloom is wanting, from the bud
 First-born of spring, to summer's musky tribes;
 Nor hyacinths, of purest virgin white,
 Low-bent, and blushing inward ; nor jonquils
 Of potent fragrance ; nor narcissus fair,
 As o'er the fabled fountain hanging still;
 Nor broad carnations, nor gay spotted pinks,
 Nor shower'd from every bush, the damask rose :
 Infinite numbers, delicacies, smells,
 With hues on hues expression cannot paint,
 The breath of Nature and her endless bloom.

Anemone.

THE ANEMONE CORONARIA—GARDEN ANEMONE, is in the class Polyandria, order Polygynia ; its generic name is derived from a Greek word, signifying wind, because it flowers both in a windy season and in exposed windy situations. Its characters are : calyx, none ; petals, six or nine ; seeds, many. Specific characters :—leaves, tenate, with multifid segments and linear mucronate lobes. Sepals, six oval close. Lindley remarks, that the Anemones are a charming collection of pretty flowers, with their purple, white, or scarlet petals, which modestly hang their heads as if unwilling to expose their beauty to every curious eye. These have their calyx and corolla mixed together, so that one cannot be distinguished from the other, and when their flowers are gone, they bear little tufts of feathery tails or oval wooly heads ; which are collections of the grains of the Anemone, and contain seeds ; the tails themselves are nothing but the styles of the carpels grown large, and hard, and hairy ; they are thought to be intended by Nature as wings upon which the grains may be carried by the wind from place to place.

That veteran troop who will not for a blast
Of nipping air, like cowards quit the field.

MASON.

And coy Anemone that ne'er uncloses
Her lips until they're blown on by the wind.

HORACE SMITH.

The ancients, remarks Phillips, made this flower the emblem of SICKNESS. Pliny tell us that the magicians and wise men in old times, attributed wonderful powers to this plant, and ordered that every person should gather the first Anemone he saw in the year, repeating at the same time:—I gather thee for a remedy against disease. It was then devoutly placed in scarlet cloth and kept undisturbed, unless the gatherer became indisposed, when it was tied either around the neck or arm of the patient. Some suppose it was made the emblem of sickness, in allusion to the fate of Adonis, the favorite of Venus, who changed his body into the flower after he had been killed by a boar, which he had wounded in the chase. It is related by other mythologists, that Adonis was restored to life again by Proserpine, on condition that he should spend one-half the year with her, and one-half with Venus; which fable is thought to imply the alternate return of summer and winter.

It was held in great estimation by the Romans who formed it into wreaths for the head; and there is scarcely any flower better calculated to be artificially imitated for the purpose of ornamenting the temple of Venus; for as its flowers are of such various colors, the Venuses of every tint from the blackest child of Africa to the fairest daughter of Caucasus, may suit their complexions by wreaths of Anemonies.

Very early in flower in the shade of the forest may be seen the early native species of this genus; and we possess quite a number, and as they flourish under trees, and in situations where the greater variety of plants would not live; they are certainly worthy of more care than is generally bestowed upon them. The roots of all of them may be procured in the woods, and taken up at the season the leaves decay to transplant in the shrubbery, or to ornament the walks of the wilderness plantations, which but few flowers do more effectually in the spring.

The Garden Anemonies that embellish and enliven our parterres at the earliest dawn of spring, are obtained in a few cases from Europe, but mostly are cultivated indigenous flowers. The Anemones are generally divided into two distinct families by the florists, under the names of **CORONARIA** and **HORTENSIS**. The latter expands its petals in the form of a star, and hence, is called the Star Anemone. Its colors run through all the shades of crimson, scarlet, purple, blue, or yellow, down to pure white, with all the intermediate tints, and frequently the petals are beautifully striped or exquisitely shaded, from the fullest of each color to the softest stain of each dye. These flowers are equally admired in the single state, semi-double, or when all the filaments are converted into petals. It grows naturally in Switzerland, Provence, Italy, and Germany, as well as in the vicinity of Constantinople, from which last place they were brought to England, and from thence introduced to America. Mr. Hobhouse informs us, that he found these plants blooming in wild profusion under the hedges and beside the paths between Smyrna and Bournabat.

The Coronaria or Poppy Anemonies were first obtained from the Levant, and their cultivation at a very early date carried on to a great extent in Holland and France. Mr. Ray enumerates near three hundred varieties of Anemones, and our modern seedsmen offer us nearly two hundred varieties of the Poppy Anemone, through the varying hues of the last kind, and still more diversified in the shades of their double petals ; we shall therefore desist from description, and say with Miss Milford—

"*Twere hard to sing thy varying charm.*

To flower these plants in the greatest perfection, a suitable compost must be prepared of good loam and rotted product of the cow-yard, adding more or less of the latter according to the lightness or richness of the loam. This should be well mixed, and if prepared a year before, and frequently turned over, so much the better. Where the Anemones are to be planted, let holes be dug of the size the clumps are to be formed, of about eighteen inches deep, and filled about six inches, as would the bottom of melon and cucumber beds.

This space must then be filled with the compost of mixed earth, leaving it a few days to settle before the roots are planted. Observe to place that side of the roots next to the earth, in which the decayed rudiments of small thready fibres are seen; then cover them about two inches deep with the prepared soil. This may be done at three different periods in the fall, with a month's interval between each planting, by which means the clumps will flower in succession during the spring. Some should also be reserved for spring planting, to flower in summer, and those planted as late as August will flower in the autumn. In choosing roots, select those that are fresh, plump, and of a moderate size, as large roots that are hollow in the centre never blow strong. The roots may be divided to increase the best varieties, but care must be taken not to break off the little tubers, as every one of these will produce a plant. The time to take up the roots will be known by the decay of the leaves, and in no case should they be suffered to remain in the ground after the proper time, for in wet years the roots will shoot afresh and be thereby considerably weakened. Wash the roots when you take them out of the ground, and then spread them on a mat or board in a dry shady place. When perfectly dried they are more securely kept in bags, hung up in the ceiling of a dry room, than when kept on shelves in boxes, where the mice will frequently destroy them. The stem of a model double *Anemone*, should be strong, elastic and erect, and not less than nine inches high. The corolla should be at least two inches and a half in diameter; consisting of an exterior row of large, substantial, well-rounded petals, or what is termed guard leaves; at first horizontally extended, and then turning a little upwards, so as to form a broad shallow cup, the interior of which should contain a great number of long, small petals, imbricating each other, and rather reverting from the centre of the blossom. The color should be clear and distinct, when diversified in the same flower, or brilliant and striking if but simple, as blue, crimson and scarlet, in which case the bottom of the broad exterior petals is generally white; but the beauty and contrast is considerably increased, when both the exterior and interior petals are regularly marked with alternate blue and white stripes

which in the broad petals should not quite extend to the margin.

The seed being light and downy, must be gathered from time to time as it opens, for it will otherwise be blown away by the first breeze of wind. In summer a bed of good mould should be prepared, and the seeds being mixed with sand, to prevent their falling in lumps, must be strewn as regularly as possible, and then some earth should be lightly sifted over the bed about a quarter of an inch thick. If the season should prove dry, the bed must be watered in the most gentle manner so as not to wash the seeds out of the ground. For which purpose a watering pot should be used, the nose of which should be perforated with very small holes that will discharge only fine streams of water. It is advisable to cover the bed with a mat during the great heat of the day, but always attending to its removal at sunset, so that the bed may have the advantage of the moist dews and gentle showers. The young plants appear about ten weeks after they are sown, and will require great care to protect them from severe frosts which will often injure them in the months of February and March, if not screened by some fence from the cutting winds of the season. In the following autumn the beds should be carefully weeded, and about a quarter of an inch of additional mould placed over them, and they will flower the second year; after which the roots may be taken up as before directed.

Phillips closes his history of the Anemone with an anecdote related by a Frenchman, who states that a Parisian florist having procured some beautiful specimens of these plants from the east, kept them to himself in the most miserly manner for ten years, during which time, neither friendship nor money could obtain the least root of one of these rare plants from the selfish owner. A witty member of the French parliament, vexed to see one man hoard up for himself what ought to be distributed to beautify gardens in general, paid a visit at his country house, where, in walking round the garden, and observing the Anemones were in seed, let his robe fall upon them as if by accident; by this device he swept off a considerable number of the little feathery seeds, which stuck fast to it. His servant, whom he had purposely instructed, wrapped



Fragaria Vesca
Strawberry.

Drawn expressly for J. K. Wellman

them up in a moment without exciting suspicion or attention. The innocent theft was made known to the friends of the member, who enjoyed the joke against the niggardly florist, and they by this project, soon spread the young plants over the Parisian gardens.

The flying savage, wounded turn'd again,
Wrench'd out the gory dart, and foamed with pain.
The trembling boy by flight his safety sought,
And now recall'd the lore which Venus taught.
But now too late to fly the boar he strove,
Who in the groin his tusks impetuous drove:
On the discolored grass Adonis lay,
The monster trampling on his beauteous prey,
Yet dares not Venus with a change surprise
And in a flower bid her fall'n hero rise !
Then on the blood sweet nectar she bestows,
The scented blood in little bubbles rose;
Little as rain drops, which fluttering fly,
Borne by the winds along a low'ring sky.
Short time ensued, till where the blood was shed
A flow'r began to rear its purple head,
Such as on Punic apples is reveal'd,
Or in the filmy rind but half conceal'd.
Still here the fate of lovely forms we see
So sudden fades the sweet Anemone.
The feeble stems, to stormy blasts a prey,
Their sickly beauties droop and pine away,
The winds forbid the flow'rs to flourish long,
Which owe to winds their name in Grecian song.

EUSDEN'S OVID.

Strawberry.

THE FRAGARIA VESCA—STRAWBERRY, is in the class Icosandria, order Polygynia. The generic name is derived from *fragra*, to smell sweet—given on account of its odor. The characters are:—Calyx, ten cleft. Petals, five; receptacle of the seeds ovate and like a berry. Specific characters:—creeping by runners.

The Strawberry, says Lindley, is an herb with three parted leaves, and a pair of large membranous stipules at the base.

The veins of the leaves are netted. When the plant is about to multiply itself, it puts forth naked shoots of two sorts: one of them is prostrate on the ground, and ends in a tuft of leaves which root into the soil, thus forming a new plant; or as it is technically called, a runner; the other kind of shoot grows nearly erect, and bears at its end a tuft of flowers, which afterwards become fruit, or at least what is commonly called so. The calyx is a flat, green, hairy part, having ten divisions; it is therefore caused by the union of ten sepals, five of which are on the outside of the others, and smaller. The corolla has five petals. The stamens are very numerous, and are placed in a crowded ring around the pistil, growing out from the side of the calyx. The pistil consists of a number of carpels, arranged in many rows and with great order upon a central receptacle; each carpel has a style which arises from below its point and terminates in a slightly-lobed stigma. In the inside of the ovary is one single ovule. The changes that take place in the organization of a pistil, during its transformation into fruit, are many and strange, and in no case more interesting than in this. Watching to detect these in the growth of the Strawberry would show as a first occurrence after the petals have fallen off and the calyx closes on the tender fruit, the swelling of the receptacle of the carpels, which, in turn, gain a greater size and more shining appearance; while their styles begin to shrivel up. At a more advanced stage, the carpels are found but little augmented in size, while the receptacle has increased so very much in dimensions, that the carpels are beginning to be separated by it, and the surface of the receptacle can be distinctly seen between them. A little older, and the carpels seem scattered in an irregular manner over the surface of the receptacle, which has become soft and juicy, while they have remained almost stationary in size. All along, the swelling receptacle has been pushing the calyx aside, as being no longer of use to it; and at last the calyx is scarcely remarked in consequence of the greater size of the receptacle. This part finally gains a crimson color, swells more and more rapidly—acquires sweetness and softness, and at last is the delicious fruit we are all so well acquainted with; in that, its final state, the carpels are

scattered over the surface in the form of minute grains, looking like seeds, for which they are usually mistaken. This, however, is an error, for each, from the first, had a style and stigma, which seeds never have; and by cutting them open the seed can be detected lying in the inside of the shell of the carpel. The Strawberry is not exactly a fruit, but is merely a fleshy receptacle bearing fruit; the true fruit being the ripe carpels.

Every year adds to the immense number of varieties of this plant; we have them at present of all sizes and flavors; and in both respects they are constantly improving. We are told by the best cultivators of them, that a light, warm, and gravelly soil suits them best. The manure applied should be exclusively vegetable; never animal. As the vines which bear the fruit require great moisture to bring it to its proper size, they should be carefully placed in a not too dry soil. The usual time for transplanting them is in August; because they have then ceased from bearing, and generally make good offsets. No leaves except the dead or decayed ones should be taken off when they are planted. They should, says an American gardener, be put eight inches apart, in rows ten inches from each other, so as to form a matted bed at least two feet wide, with a foot-path between them. The larger and finer kinds should be planted in larger beds, with a still greater distance between them; and care should be observed to prevent them running together.

The origin of the word *Strawberry*, came from the quantities of straw used in the beds; so as to prevent the fruit from lying on the ground, and the moisture round the plant from evaporating. Oak leaves, however, have been recommended as much preferable.

With regard to its use, we are told that the fruit is fragrant, delicious, and liked by almost every one. It contains some nutritious matter which is easily digestible in the stomach, and hence, very nourishing; and which may be eaten in safety by gouty and rheumatic persons. Hoffman states, that he has known consumptive people recover by their means.

It is the emblem of **PERFECT EXCELLENCE**. Tyas remarks, that an illustrious French writer conceived the design of com-

piling a general history of nature, in imitation of the ancients, and of some moderns. A strawberry plant, which chanced to grow by his window, dissuaded him from this design. On minutely observing it, he discovered so much to learn and to admire, that he felt convinced that the study of a single plant, with its habits, would suffice to employ the lives of many learned men. He therefore abandoned his design and the ambitious title he had selected, and gave to his book the simple title, "Studies from Nature." In this book, which is worthy of Pliny or of Plato, we find the best history of the Strawberry. This humble plant delights to grow in our woods, and to cover their borders with delicious fruit, which is the property of any one who chooses to gather it. It is a charming gift, that Nature has withdrawn from the operation of those laws which render property exclusive :—this she is pleased to bestow on all her children.

The flowers form pretty bouquets ; but what barbarous hands would wish to gather them, and so destroy the promised fruit. Let us hear Wordsworth's plea for the Strawberry Blossom.

That is a work of waste and ruin !
 Do as Charles and I are doing !
 Strawberry blossoms, one and all,
 We must spare them,—here are many—
 Look at it,—the flower is small,
 Small and low, though fair as any ;
 Do not touch it ;—summers two
 I am older, Anne, than you.

Pull the primrose, sister Anne,
 Pull as many as you can.
 Here are daisies, take your fill ;
 Pansies, and the cuckoo-flower ;
 Of the lofty daffodil
 Make your bed and make your bower ;
 Fill your lap and fill your bosom ;
 Only spare the strawberry blossom.

Primroses, the spring may love them ;—
 Summer knows but little of them.
 Violets, a barren kind,
 Withered on the ground must lie ;
 Daisies leave no fruit behind,
 When the pretty flow'rets die ;
 Pluck them, and another year,
 As many will be growing here.

God has given a kindlier power
To the favored strawberry flower,
When the months of spring are fled,
Hither let us bend our walk;
Lurking berries, ripe and red,
Then will hang on every stalk,
Each within its leafy bower;
And for that promise spare the flower.

It is, however, most delightful to find the fruit of the strawberry, at all seasons of the year, amid the glaciers of the lofty Alps. When the sun-burnt traveller, oppressed with fatigue upon those rocks, which are as old as the world,—in the midst of those forests, half destroyed by avalanches,—vainly seeks a hut to rest his weary limbs, or a fountain to refresh himself—unexpectedly he sees, emerging from the midst of the rocks, troops of young girls, advancing towards him with baskets of perfumed strawberries; they appear on all the heights above, and in every dell below. It seems as if each rock and each tree were kept by one of these nymphs, as placed by Tasso at the gate of the enchanted gardens of Armida. As seducing, though less dangerous, the young Swiss peasants, in offering their charming baskets to the traveller, instead of retarding his progress, give him strength to pursue his journey. The strawberry has the property of not undergoing the acetous fermentation in the stomach. The learned Linnæus was cured of frequent attacks of gout by the use of strawberries. This fruit, it is said, has often restored to health patients given over by every physician. They will compose a thousand different sherbets, they are the delight of our tables, and the luxury of our rural feasts. Everywhere these charming berries, which dispute in freshness and in perfume the buds of the most beautiful flowers, please the sight, the taste, and the smell. Yet there are some unfortunate enough to hate strawberries, and to swoon at the sight of a rose. Ought it to astonish us, since we hear certain persons grow pale at the relation of a good action, as if the inspiration of virtue were a reproach to them! Happily, these sad exceptions take nothing from the charm of virtue,—from the beauty of the rose,—nor from the perfect excellence of the most charming of fruits.

Cherry Tree.

THE PRUNUS CERASUS—CHERRY TREE, is in the class Icosandria, order, Monogynia. The generic name is derived from a Latin word meaning plum. Its characters are : calyx, five cleft, inferior ; petals, five ; drupe, with a nut having the sutures prominent. Specific characters :—umbels, sub-peduncles ; leaves, ovate, lanceolate, smooth folded together.

This well known tree bears its white flowers in April and May, in preparation for its loads of fruit the forthcoming season. We find an account of its first introduction to Italy, seventy-three years before our Saviour's advent, by Lucullus, who obtained it from a town in Pontus, in Asia, called Cerassus, from whence it derives its specific name. The Romans brought it to England, though it is supposed that these have all been lost. There is no proof that cherries were in England at the time of the Norman conquest, nor for some time after, but Lydgate, who wrote about 1415 or before, says that cherries were then exposed for sale in the London market, as they are now in the early season. It is a very ornamental tree in the shrubbery, and in woods, and is esteemed valuable in England, as encouraging the various species of thrush.

This tree is of a medium size ; the branches of an ash color and shining. The leaves, egg-shaped, and minutely toothed on the margin. The flowers are white, and produced in umbels. The fruit, a roundish drupe of different colors, yellow, red, or black ; always covered with a shining cuticle. Louden speaks of it as a refreshing summer fruit, always grateful to the palate of man ; as well as the flying denizens of the air. It is used in some places, not only as an article of luxury but of food. Bosc tells us, that in the forests of the mountains east of France, great quantities of them are prepared by drying ; upon which the Charboniers, a half civilized, but kind and hospitable race, mostly exist in the winter. Their soups are made by boiling the dried fruit in water, with a small portion of butter and bread. The gum which exudes from the tree has been found equal to Gum Arabic. Hassel-



Prunus Cerasus.
Cherry Tree.

Drawn expressly for J.R. Wellman



Mirabilis jalapa
Marvel of Peru.

Drawn expressly for J. K. Webbman.

quist tells us, that more than two hundred men, during a long siege, were kept alive by its means ; they put a little of the gum in their mouths and allowed it to dissolve slowly.

PRUNUS VIRGINIANA—**WILD CHERRY** is, like the fruit tree we have just named, of but a medium size in our latitude, but further to the south and west, it attains an enormous magnitude. Michaux mentions trees on the banks of the Ohio, which are from eighty to one hundred feet high, and their trunks from twelve to sixteen feet in circumference. The fruit is small, black and rather bitter ; and the bark possesses a spicy, bitterish taste, which is but an index to its valuable tonic properties. It flowers in May or June. The wood, for which it is solely valued, is well known in cabinet work, manufacture of flutes, picture frames, and many other uses, for which purposes it is often preferred to mahogany, which it closely resembles in color and qualities. Tyas remarks, that the Wild Cherry tree, by careful cultivation, will yield agreeable and excellent fruit, in lieu of the dry berries which it bears naturally. So the human intellect, if uncultivated, will be found full of tares and weeds, but if trained carefully, it will bring forth the fruit of uprightness and integrity. The Cherry tree is consequently the emblem of a **GOOD EDUCATION**.

Marvel of Peru.

MIRABILIS JALAPA—**FOUR O'CLOCK, OR MARVEL OF PERU**, is in the class Pentandria, order Monogynia. Its characters are :—Corol, funnel form, narrowed below ; calyx, inferior ; germ, between calyx and corol ; stigma, globe shaped. Specific characters :—Flowers clustered, stalked ; leaves smooth.

Lindley remarks, that people are so accustomed to identify gay colors with the corolla of a flower, that it is always difficult to make them believe the ovary and red striped part of the Marvel of Peru to be really a calyx. It is the representative of a tribe named after it, belonging to the Apetalous division of Dicotyledonous plants. It has fleshy perennial roots,

jointed stems which perish at the first attack of frost, and broad opposite leaves with netted veins. Its flowers appear in compact clusters, and are each surrounded at the base by a green involucre, divided into five segments, so as to resemble a calyx, for which it would certainly be mistaken, did it not sometimes bear two flowers within the same involucre; a kind of structure that is never found in a true calyx.

Each flower consists—firstly, of a funnel shaped calyx, divided at the end into five orange and red plaited lobes, and contracted at the base into a roundish fleshy ball; secondly, of five stamens of unequal lengths, arising from below the ovary, round which they form a fleshy cup, and then adhering to the sides of the calyx; so that they are actually ferruginous and hypogynous at the same time. The ovary is a superior body containing a single ovule, which grows from the bottom of the cavity; it is terminated by a long thread-shaped style, which ends in a cluster of little round warts, forming a stigma. As soon as the flower begins to fade, the roundish fleshy ball at the bottom of the calyx, swells and grows harder, contracting at the top, and in time throwing off the thin and colored part. At last it acquires a woody texture—shrivels round the veins and becomes an oblong brown nut, with a little hole at its point, where the upper colored part of the calyx fell off. On examining it the fruit will be found with a very thin shell, and the remains of the style at the top. Within it lies a single seed, having an embryo rolled round a quantity of mealy substance which is the albumen. Such is the character of the natural order that contains the *Marvel of Peru*, which is by far the most handsome genus it comprehends.

Generally, the order consists of obscure weeds which are rarely seen in gardens, although they are common enough in tropical countries. The singular circumstance of the lower part of the calyx becoming hardened and forming a sort of spurious shell to the fruit, is generally considered the essential character of the tribe; which, in this case, affords a striking instance of the highly colored condition often assumed by the calyx, and of the singular manner in which one part is occasionally employed by nature to perform the office of another.

Phillips observes, of this marvellous plant of the new World, whose flowers seem too timid to expand their curiously colored corollas even to a meridian sun, has occasioned the French to name it *BELLE DE NUIT*. In emblematical language the flower is made the emblem of *TIMIDITY*. The generic name, *Mirabilis*, was given to this plant from the wonderful diversity of colors in the flowers. It was originally brought into Spain from Peru, where it was called *HACHAL*, and for some time it retained the name of Hachal Indi. It was named *MIRABILIS PERUVIANA* by Carolus Clusius, and we may, therefore, naturally conclude that it was first introduced into Europe from the middle to the end of the sixteenth century, that being the period of his botanical labors. From the form of the flowers being somewhat similar to those of the Jasmine, several old writers named it *JASMINUM MEXICANUM*. It was first cultivated in England in the time of Gerard, who tells us in his work of 1597, that he had then planted it many years in his garden, and that in temperate years he had procured ripe seed. He writes at considerable length on the beauty of the flowers, and says it ought to be called *Marvel of the World* rather than of Peru alone.

Cartusus, a Professor of Botany at Padua, who died in 1593, was the first one who discovered the cathartic qualities of the root of this plant, and it was shortly afterwards supposed to be the true Gelapor or Jalap of the shops, and the plant was named accordingly. Dr. James observes, in his History of Drugs, 1745, that the Jalap was a root unknown to the ancients, and also in Europe till the discovery of America. He adds, that it usually comes from the Spanish West Indies in transverse slices about an inch thick, being rugged, and of a dark brown color on the outside and whitish within, full of black shining resin. This has been believed to be the opinion of most authors, that it is a species of *Convolvulus*, and often noticed as such in their descriptions; but if we may rely on the account Father Plumier gives of it, it is a species of *Marvel of Peru*. This error has been since discovered, and it is now clearly ascertained that the true Jalap is the root of an American species of *Convolvulus*, distinguished by the name of

Jalapa, consequently our plant is known often as the False Jalap. We are indebted to Dr. Houston for this discovery, he having ascertained the fact in the Spanish West Indies, from whence he brought over a drawing of the plant, made by a Spaniard at Xalapa or Halapá.

The Marvel of Peru has a fusiform root, which should be taken up in the autumn, and kept under cover in dry sand until the spring, when it may be planted where it is to flower; but as the seeds which are sown in the spring produce plants that flower in the summer, this mode of preserving the roots is not usually attended to.

The seeds should be sown in early spring, quite early, on a moderate hot-bed. When the plants come up, plenty of air should be admitted as often as the weather is mild, and when they are about two inches in height they may be transplanted into a second very moderate hot-bed; or each plant be put into a small pot filled with light rich earth, and plunged into a hot-bed, from whence they may be taken out into the borders with more security than those that are planted in the bed. As soon as the plants have taken root in the second hot-bed, they should be gradually inured to the open air, which will prepare them for the open garden about the beginning of June. The seeds may be sown in a warm open border in April, which will give plants for the autumn flowering.

From the size of these plants, being branched, and from three to five feet in height, they are better calculated for the foreground of the shrubbery than for the smaller borders of the parterre. They retain their beauty for a great length of time, being frequently covered with blossoms from the beginning of July to the end of October, and the flowers are so numerous that the plants have a most cheerful appearance, particularly towards the evening, as they seldom expand in warm weather before four o'clock in the afternoon, on which account it is sometimes called the "Four o'clock Flower." But when the sun is obscured, and the weather is moderately cool, these timid blossoms remain open during the whole day.

It is necessary to preserve seeds from different plants, since those of the white or purple varieties, however they may sport



Drawn by E. Whittlefield

in these two colors, never produce plants that give out red or yellow flowers, and one great beauty in the effect of these plants is to give a mass of varying colors.

The Marvel of Peru is particularly adapted for public gardens that are frequented in the evening, since these flowers appear awake and gay when most other blossoms sleep ; and when the light of lamps is thrown on their numerous and richly dyed corollas, their appearance becomes enchanting, and deserving of the title of *BELLE DE NUIT*.

These plants, when forced and cultivated in large pots, are well calculated to decorate the saloons of the gay ; for however timid the flowers may appear in meeting the smiles of the god of day, they stand the blaze of the strongest artificial light as cheerfully as other belles who delight to shine at the same hour with the emblem of timidity.

Mushrooms.

THESE plants, so different from all the rest of the vegetable kingdom, agree without exception in being destitute of the green color, of very rapid growth and correspondingly rapid decay. It is in the beginning, according to Lindley, nothing but a thin layer of cobweb-like matter spread amongst old tan, but by degrees little protuberances of a whitish color appear on the surface of the cobwebs, they gradually lengthen and acquire a sort of stalk, and up to a particular period consist of only a single fleshy mass of fibres and minute cells ; if cut through at the time, exhibiting only one uniform face. But in a short time, a minute cavity is formed in the fungus at the thicker end, within which a sort of cap is gradually elevated upon a stalk ; the cap and stalk keep progressively enlarging, and stretching the skin within which they are enclosed till at last it cracks ; the cap and its stalk rapidly enlarge and tear away through the skin, and at last burst forth into light, a perfect mushroom, with numerous cinnamon brown gills or *lamellæ* radiating from the stalk underneath the cap, and concealing the theca in which the spores are laid up. When it has gained its full size, its

stalk is surrounded at the base by a thick fleshy sheath called the *voluta* or wrapper, which is nothing but the remains of the skin within which the fungus was formed. So simple is the growth of this and such plants, as to have given rise to the belief that they are not propagated by the agency of spores, which are always sure to reproduce the plant from which they originate, but are dependent for their peculiar appearances upon the different circumstances under which they are developed.

AGARICUS CAMPESTRUS—EDIBLE MUSHROOM (See Plate) is known by its white, fleshy, dry and somewhat scaly appearance. The lamellæ are free, inflated, and of a pink color, changing to dark furrows. The stripes are white and solid, with an annular veil. Tyas remarks, that many species are known to be deadly poison, and places it under the head of Suspicion in floral language. A Siberian tribe make a preparation from it which will kill the most robust man in twelve hours. Several around us are almost as dangerous; as there is a liquid hid within them of a nature so acrid, that a single drop put on the tongue will produce a blister. The Russians, during their long fasts, live entirely on them, and are thrown into violent convulsions in consequence. Though a dainty dish, they should be used with much caution. Before using them, they should be exposed to the heat of boiling water; this will ascertain, it is said, their quality, as if not of a good kind their perfume will be evaporated.

Preserving and Preparing Plants.

In a former part of the work we have spoken of the conversion of garden flowers into monsters, or their having parts unnaturally changed and developed. It is on this account that cultivated flowers should always be avoided by the student. Two advantages are gained by this; one, having the proper specimens, which must be picked wild, and the other the exercise afforded by their pursuit. A gentleman of this city who understands as much of the science of Botany as perhaps any man in it, informed us sometime since, that he gave up the study of Chemistry, in which he had made considerable advances, for that of Botany, on account, solely, of health. We cannot conceive of a more pleasant excursion than that of collecting plants, affording as it does, for the majority of persons, just enough of exercise to make it exciting, while the mind is constantly interested and instructed.

The student should remember to gather at least two good specimens; one for dissection, and the other for preservation. A year's file of any of our daily papers will afford the best possible apparatus for drying them. Place the specimens between the sheets, laying on top of the whole a board with a weight; an occasional airing of the whole will be sufficient. The time occupied will vary, according to the juiciness of the plant, from two days to three weeks. When well dried, transfer them to the leaves of a large blank book of white paper, prepared for the purpose, of a proper size. Write on each page with the plant, its artificial class and order, and generic and specific distinctions, and natural order; the place where found, and season of the year in which it flowers. We will suppose it to be the Dandelion.

DANDELION—*LEONTODON TARAXICUM*, or more modern, *TARAXACUM DENS-LEONIS*. Class, Syngenesia; order, Polygamia *Æqualis*. Natural order, compositæ. Generic characters:—calyx, imbricate with loose scales. Down, capillary; receptacle naked, dotted.

Specific characters:—lower calcynine, scales reflex; leaves ruminant, toothlets even. Blossoms all the year except winter: found in August. Flowers, golden yellow color; height six inches. And any other remarks that would prove interesting.

In fastening them to the sheet, some cut the paper into loops, others use glue, and a third, and we think rightly, prefer to sew them on with a fine needle and thread. To guard against moisture and insects, wash the whole over with a solution of corrosive sublimate.

FLORAL DICTIONARY.

- ACACIA. Platonic love.
Acacia Rose. Elegance.
Achillea Millefolia. War.
Adonis Flos. Painful Recollection.
Agnus Castus. Coldness.—
To live without love.
Agrimony. Thankfulness.
Aloe. Bitterness.
Almond Tree. Indiscretion.
Almond Laurel. Perfidy.
Amaranth. Immortality.
Amaryllis. Haughtiness;
Pride.
American Cowslip. You are
my divinity.
Anemone, Field. Sickness.
“ Garden. Forsaken.
Angelica. Inspiration.
Apple Blossom. Preference.
A Rose Leaf. I never importune.
Arum, or Wake Robin. Ardor.
Ash. Grandeur.
Asphodel. My regrets follow
you to the grave.
Aster, China. Variety and
after thought.
- Balm Gentle. Pleasantry.
Balm of Gilead. Healing.
Balsam. Impatience.
Barberry. Sharpness.
Basil. Hatred.
Bear's Breech. Arts (the).
Beech. Prosperity.
Bee-Ophrys, or Orchis. Error.
Billberry. Treachery.
Bindweed. Humility.
Black Thorn. Difficulty.
Bladder-Nut Tree. Frivolous
amusement.
Blue Bottle Centaury. Delicacy.
Borage. Bluntness.
Box. Stoicism.
Bramble. Envy.
Broken Straw. Dissension:
Rupture.
Broom. Neatness.
Buckbean. Calm repose.
Burdock. Importunity.
Buttercups. Ingratitude.
Cactus. Horror.
Candy Tuft. Indifference.
Canterbury Bell, Blue. Con-
stancy.
Carnation, Yellow. Disdain.
Catchfly. Snare.

Cherry Tree.	Good education.	Fern.	Sincerity.
Chestnut Tree.	Do me justice.	Fern, Flowering.	Reverie.
China Aster.	Variety.	Fir Tree.	Elevation.
China or Indian Pink.	Aversion.	Flax.	I feel your kindness.
Cinquefoil.	Beloved Daughter.	Flora's Bell.	You are without pretension.
Clematis.	Artifice.	Flaxinella.	Fire.
Clove Pink.	Dignity.	Fuller's Teazel.	Misanthropy.
Colt's-foot.	Justice shall be done you.	Geranium.	Sorrowful; Melancholy spirit.
Columbine.	Folly.	Geranium, Pencil Leaf.	Ingenuity.
Coriander.	Hidden Merit.	Gillyflower.	Lasting beauty.
Corn.	Riches.	Goose-foot.	Goodness.
Cornelian Cherry Tree.	Durability.	Grass.	Utility.
Crown Imperial.	Majesty.	Hawthorn.	Hope.
Cuscuta.	Meanness.	Hazel.	Reconciliation.
Cypress.	Mourning.	Heart's Ease, or Panzy.	Think of me.
" and Marygold.	Despair.	Heath.	Solitude.
Daisy.	Innocence.	Heliotrope, Peruvian.	Devoted attachment.
Daisy, Garden.	I partake your sentiments.	Hepatica, or Noble Liverwort.	Confidence.
Daisy, White.	I will think of it.	Holly.	Foresight.
Daffodil.	Delusive hope.	Hollyhock.	Ambition.
Dandelion.	Oracle.	Honeysuckle.	Bonds of love: devoted affection.
Dead Leaves.	Sadness.	Hop.	Injustice.
Dittany of Crete.	Birth.	Hornbeam.	Ornament.
Dodder.	Baseness.	Horse Chestnut.	Luxury.
Ebony.	Blackness.	Hydrangea.	You are cold.
Eglantine or Sweet Briar.	Poetry.	Hyacinth.	Game: play.
Enchanter's Night-shade.	Fascination.	Ice Plant.	Your looks freeze me.
Fennel.	Strength.	Indian Jasmine.	I attach myself to you.
		Iris.	Message.

Iris, German.	Flame.	Michaelmas Daisy.	Afterthought
Ivy.	Friendship.	Mignonette.	Your qualities surpass your charms.
Jasmine, Indian.	I attach myself to you.	Milkwort.	Hermitage.
Jessamine, or Jasmine.	Amiability.	Misseltoe.	I surmount all difficulties.
Jonquille.	Desire.	Moonwort.	Forgetfulness.
Juniper.	Asylum: protection.	Moschatel.	Weakness.
Larch.	Boldness.	Moss Rose.	Pleasure without alloy.
Laurel.	Glory.	Moss, Tuft of.	Maternal love.
Laurestine.	I die if neglected.	Motherwort.	Secret love.
Leaves, dead.	Melancholy.	Moving Plant.	Agitation.
Lilac.	First emotion of love.	Mulberry Tree, black.	I will not survive you.
Lilac, White.	Youth.	Mulberry, white.	Wisdom.
Lily, White.	Purity and modesty.	Mushroom.	Suspicion.
Lily of the Valley.	Return of happiness.	Musk Rose.	Capricious beauty.
Linden Tree.	Conjugal love.	Myrobalan.	Privation.
London Pride.	Frivolity.	Myrtle.	Love.
Lotus.	Eloquence.	Myosotis, or Mouse Ear.	Forget-me-not.
Lucern.	Life.	Nettle.	Cruelty.
Madder.	Calumny.	Night Convolvulus.	Night.
Maiden Hair.	Discretion: secrecy.	Nightshade,	Bitter Sweet.
Mallow.	Mild or sweet disposition.	Nosegay.	Gallantry.
Manchineel Tree.	Falsehood.	Oak.	Hospitality.
Mandrake.	Rarity.	Olive Branch.	Peace.
Maple.	Reserve.	Orange Flower.	Chastity.
Marvel of Peru.	Timidity.	Orange Tree.	Generosity.
Madwort, Rock.	Tranquility.	Orchis, Bee.	Error.
Marygold.	Inquietude.	" Spider.	Ingenuity.
" Small Cape.	Presage.	Parsley.	Entertainment: Feasting.
Mallow Saffron.	My best day's are past.	Pasque Flower.	You are without pretension.
Meadow Sweet.	Uselessness.	Mezereon.	Desire to please.
Periwinkle.	Sweet remembrance		

Peruvian Heliotrope.	I love you: infatuation.	Rose, Hundred leaved. Graces. Rosebud. Young Girl.
Pheasant's Eye.	Sorrowful remembrance.	" White. The heart that knows not love.
Pimpernel.	Assignment.	Rosemary. Your presence re-
Pine Apple.	You are perfect.	Pine Apple. Lives me.
Pink.	Lively and affectionate.	Rose-scented Geranium. Pre-
Plane Tree.	Genius.	ference.
Plum Tree.	Keep your promi- ses.	Roses, a Garland of. Reward of Virtue.
Plum Tree, wild.	Indepen- dence.	Rush. Docility.
Poet's Narcissus.	Egotism.	Saffron. Excess is dangerous.
Potato.	Beneficence.	Sage. Esteem.
Poplar, Black.	Courage. " White. Time.	Scarlet Ipomæ. I attach my- self to you.
Poppy.	Consolation of sleep. " White. Sleep of the heart.	Sensitive Plant. Timidity.
Primrose.	Early Youth. " Evening. Inconstancy.	Serpentine Cactus. Horror.
Privet.	Prohibition.	Service Tree. Prudence.
Provins Rose.	Graces.	Shaking Saintfoin. Agitation.
Pyramidal Bell Flower.	Grati- tude.	Snap Dragon. Presumption.
Quaking Grass.	Agitation.	Snowdrop. Consolation.
Ranunculus.	You are radi- ant with charms.	Spider Ophrys. Skill.
Red Shanks.	Patience.	Spiderwort. Transient happi- ness.
Red Valerian.	Accommodating disposition.	Spindle Tree. Your image is engraven on my heart.
Reeds.	Music.	Stock, Ten-week. Promptitude.
Rest Harrow.	Obstacle.	Stramonium, common. Disguise
Rose.	Beauty. " Monthly. Beauty ever new.	Strawberry. Perfect excellence.
Rose, Wild.	Simplicity. " White. Silence.	Sunflower. False Riches.
		Sweet-briar, or Eglantine. Po- etry.
		Sweet-scented Tussilage. Jus- tice shall be done you.
		Sweet Sultan. Felicity.
		Sweet William. Finesse.
		Teazle. Misanthropy.

Thistle.	Austerity.	Wake Robin.	Ardor.
Thrift.	Sympathy.	Wall-flower.	Fidelity in ad-
Thorn Apple.	Deceitful charms.	versity.	
Thyme.	Activity.	Water Lily.	Eloquence.
Tremella.	Resistance.	Weeping Willow.	Melancholy.
Truffle.	Surprise.	Wild, or Dog Rose.	Simplicity.
Trumpet Flower.	Separation.	Willow Herb.	Pretension.
Tulip.	Declaration.	Wood Sorrel.	Joy.
Venus' Looking-glass.	Flattery.	Wormwood.	Absence.
Vervain.	Enchantment.		
Veronica.	Liberty.	Yarrow.	War.
Vine.	Intoxication.	Yellow Day Lily.	Coquetry.
Violet, Blue.	Modesty.	Yellow Rose.	Infidelity.
" White.	Candor.	Yew.	Sorrow.

ERRATA.

In the preface read, "And ever as the blue bells, &c. did its islanders." Page 17, Asperfolia, read four naked seeds instead of five. In page 19, read, it is in the class Monadelphia formerly Gynandria. Page 34, read Scoparium for Scoparuis. There are many minor errors, but we have noticed the most important that presented themselves, in a rapid glance. In closing our connexion with the Illustrated Botany, we would direct those who wish an exceedingly simple exposition of its elements to a work recently prepared by us for Mr. Wellman called Botany for Young People.

GLOSSARY OF BOTANICAL TERMS.

A is a prefix, signifying privation; as	Apterous; without wings.
acaulis, without a stem.	Arachnoid; simulating a spider's web.
Abortive; without use.	Arboreous; resembling a tree.
Abrupt; cut off suddenly.	Aril; an outer seed covering.
Acerose; stiff, linear, and sharp.	Aristate; ending in a bristle.
Acicular; needle-shaped.	Armed; furnished with thorns.
Acinaciform; scimetar-shaped.	Arbustivous; shrubs.
Acinus; a berry of a compound cluster, as the raspberry.	Arcuate; bent like a bow.
Aculeate; prickly.	Arundinaceous; resembling a reed.
Acuminate; awl-pointed.	Arvensis; growing in fields.
Acute; sharp.	Ascidium; bottle-shaped.
Aduate; growing together.	Attenuated; diminishing.
Agglomerated; crowded together.	Auriculate; eared.
Aggregate; clustered, but not compound.	Axil; an angle formed by the leaf and stem.
Alated; winged.	Axis; an elongated stalk, serving as a support and centre for flowers.
Agamous; without visible stamens or pistils.	Bacca; a berry.
Albumen; the fleshy substance of seeds.	Banner or Vexillum; the largest petal of flowers, resembling those of the pea.
Alveolate; cells like a honey-comb.	Barren; without producing fruit.
Ambitus; outer rim of a frond receptacle.	Bicuspidate; with two projections or points.
Ament; a collection of flowers on a stalk, resembling a cat's tail.	Barb; a straight process, armed with teeth.
Amplexicaule; clasping.	Barbatus; bearded.
Ancipital; two edged.	Bicornis; two-horned
Androgynous; monoecious.	Bifid; two parted.
Angustifolius; narrow leaved.	Bilabiate; with two lips.
Annulated; with a ring.	Botrus; a grape cluster.
Anomalous; not in order.	Branchlet; little branch.
Aphyllous; without leaves.	Brachiate; branches opposite, each pair at right angles with the preceding.
Appendiculate; having some appendages.	Caducous; dropping off early.
Anti-scorbutics; curers of eruptive diseases.	Cespitose; forming tufts.
Appressed; pressed closely.	

Calcarate; furnished with a spur.	Connate; opposite, with the bases growing in one.
Calyculate; furnished with an additional outer calyx.	Connivent; convergent.
Campanulate; bell-shaped.	Contorted; twisted.
Campestris; growing wild.	Cortical; belonging to the bark.
Canescent; whitish and hoary.	Coriaceous; leathery, tough, and thick.
Cancellate; filled with cells.	Corneous; horny.
Capitate; growing in heads.	Costate; ribbed.
Capillary; hair-like.	Crenate; scalloped.
Capsule; a little chest.	Cribiform; full of holes like a sieve.
Carrina: a keel; applied to butterfly flowers.	Crested; resembling a cock's comb.
Carnose; of a fleshy consistence.	Crinitus; long-haired.
Carpel; a term used in dividing the fruit.	Cuculate; hooded, or cowled.
Caudate; furnished with a tail.	Cucurbitaceous; cucumber-like plants.
Caudex; the upper part of a root which gives rise to a stem.	Culm; the stem of grasses.
Caule; growing on a stem.	Cupule; a cup, as an acorn.
Ciliate; fringed with hairs.	Cypsele; a little chest.
Cinereous; ash color.	Deciduous; falling off in the usual season.
Cirrhose; bearing a tendril.	Declined; tending downwards.
Cereal; applied to fruits of which bread is made.	Decumbent; leaning upon the ground.
Clavate; club-shaped.	Decurrent; when the edges of a leaf run down a stem or stalk.
Coadunate; united at base.	Decussated; in pairs, crossing each other.
Coarcate; crowded.	Deflected; bent off.
Cochleate; coiled spirally, like a snail shell.	Dehiscent; cracking open, as in capsular seed vessels.
Coccum; a seed or grain.	Dentate; toothed.
Collinus; growing on hills.	Denticulate; minutely toothed.
Colors; any thing that differs from green is called in botany a color.	Demersus; under water.
As, Water color; Hyalinus.	Dichotomous; forked, dividing into two equal branches.
White; Albus.	Digitate; hand, or fringe-shaped.
Lead color or ash; cinereous.	Dimidiate; half.
Black; niger.	Discord; disk covered with florets, but without rays.
Brown; fusca.	Disk; the top.
Pitch Black; ater.	Dissepiment; the partition of an internal wall of a capsule.
Yellow; Luteus.	Divariccate; diverging so far as to turn backward.
Straw color; flavus.	Divergent; spreading.
Flame color; fulvus.	Dorsal; belonging to the back.
Red; rubex.	Drooping; more of a downward tendency than nodding.
Flesh color; incarnatus.	Duleis; sweet.
Scarlet; coccineus.	Dumosus; bushy.
Purple; purpureus.	Duplex; double.
Violet color; ceruleo-purpureus.	Drupaceous; resembling drupes.
Blue; ceruleus.	Echinatus; beset with prickles.
Green; Viridis.	Eburneus; ivory white.
Columella; a central pillar.	Ecostate; without nerves or ribs.
Coma; a tuft of bracts on the top of a spike of flowers.	Emarginate; with a notch on the end.

- Enodis; without joints or knots.
 Eniform; sword-shape, two-edged, like the leaves of the common Iris.
 Entire; even or whole at the edge.
 Eroded, with an appearance of knawing at the edge.
 Exserted; projecting out of the bowl or sheath; beautifully shown in the Wild Columbine and Fuchsia Coccinea.
 Falcate; linear and crooked.
 Farina; used sometimes to denote meal or corn, and at other times pollen.
 Fascicle; a bundle.
 Fastigate; flat topped.
 Favose; honeycomb-like.
 Fertile; producing fruit.
 Filament; a slender, thread-like part.
 Fimbriate; simulating a fringe.
 Fistulous; hollow, or tubular, like an onion leaf.
 Flabelliform; spreading, like a fan.
 Flagelliform; like a whip lash.
 Flexuous; serpentine or zigzag.
 Floacular; a floret in a compound flower, which is tubular, and not ligulate, as in the thistle.
 Follicle; a seed vessel, which opens lengthwise, or on one side only.
 Fragilis; breaking easily.
 Frondose; leaf-like.
 Frutescent; becoming shrubby.
 Fugaceous; easily flying off.
 Fulera; props or supports.
 Furfuraceous; resembling bran, the cloting of some leaves.
 Galea; a hemlet.
 Gemmaceous; belonging to a bird.
 Geniculate; bent like a knee.
 Germination; sprouting of the seed.
 Gibbous; swelled out, commonly on one side.
 Glabrous; smooth, without hair or pubescence.
 Gland; a little appendage, generally roundish, for the secretion of various substances.
 Glandular pubescence; hair-tipped, with little heads or glands, as in the sun-dew.
 Glaucous; palish green, easily rubbed off.
 Glome; a roundish head of flowers.
 Glomerate; many little branches terminated by heads.
 Glume; the scales, valves, or chaff which make the calyx and corolla of grasses.
 Glutinous; adhesive; covered with a sticky fluid.
 Graminaceous; grass-like.
 Grandiflorus; with large flowers.
 Granular; covered or composed of little grains.
 Gravicolens; having a strong odor.
 Gregarious; so called from growing together, in large groups.
 Grooved; marked with deep lines.
 Grumose; thick, crowded.
 Habit; plants appear capable of contracting habits. The Mimosa, or Sensitive Plant, if conveyed in a carriage, closes its leaves as soon as the carriage is in motion, but soon after it becomes accustomed to it, the contraction ceases, and the leaves expand: but if the carriage stops for any length of time, and afterwards recommences its motion, the plant again unfolds its leaves; and it is time only that can reconcile it to its new situation.
 Habitation; this term relates to the geographical distribution or native places of plants on the globe.
 Head; a dense round collection of flowers, nearly sessile, as the clover.
 Helmet; the concave upper lip of a labiate flower.
 Herb; a plant without a woody stem.
 Herbarium; a collection of dried plants.
 Hirsute; rough with hairs.
 Hisped; more bristly than hirsute.
 Hoary; whitish colored, having a scaly mealiness.
 Hunnilis; low and humble.
 Husk; a larger kind of glume, as that of corn.
 Hybernalis; growing in winter.
 Hybrid; a mongrel or intermediate species between two others from which it is descended, produced by different pollen.
 Hypocrateriform; salver-shaped, with a tube abruptly expanded into a flat border.
 Hypogynous; under the style.

Imbricate ; lying over each other.	Lateral ; on the side, above the axil.
Included ; wholly received or contained in a cavity ; the opposite of exserted.	Lepanthium ; a petal-like nectary.
Incassated ; thickened upwards, larger toward the end.	Ligneous ; woody.
Incumbent ; lying against or across.	Ligulate ; strap or ribbon-shaped.
Indigenous ; growing native within a country.	Limb ; the border or spreading part of a monopetalous corolla.
Indusium ; a covering.	Linear ; long and narrow.
Inferior ; below. A calyx or corolla is inferior when it comes out below the germ.	Lip ; the upper or under side of the mouth of a labiate corolla.
Inflated ; appearing as if blown up by wind, tumid or hollow.	Littoralis ; growing on coasts or shores.
Infractus ; bent in, with an acute angle, so as to appear broken.	Lobe ; a large division : a distinct portion of either petal or leaf.
Infundibuliformis ; funnel-shaped : tubular at bottom and gradually expanding towards the top.	Loment ; a pod resembling a legume.
Inserted into ; another mode of saying growing out of, &c.	Longifolius ; long leaved.
Isidens ; setting upon.	Longissimus ; very long.
Insignitus ; marked.	Lucidus ; bright and shining.
Internode ; the space between the nodes or joints of some stems, as in the grasses.	Lurid ; of a pale dull color.
Intortus, twisted inwards.	Maculatus ; spotted.
Involucrum ; a kind of general calyx, serving for many flowers, generally situated at the base of an umbel or head.	Marescent ; withering.
Keel ; the under petal of a butterfly or papilionaceous flower. Also the lower side of the midrib of a leaf when edged.	Margin ; edge or border.
Knobbed ; in thick lumps.	Maritime ; growing near the sea.
Labiate ; having an upper and a lower lip.	Medulla ; pith of vegetables : pulp.
Laciniate ; cut, torn, and jagged.	Mollis ; soft.
Lactescent ; yielding a white or milky juice.	Monilliform ; strung together, like a string of beads.
Lamellated ; in thin plates.	Monospermus ; one seed to a flower.
Lacunose ; covered with little pits or depressions.	Montanus ; growing on mountains.
Lacustris ; growing about lakes.	Mucronate ; having a small, sharp point projecting from an obtuse end.
Levis ; smooth and even.	Multipartite ; many parted.
Lamina ; the border or flat end of a petal in distinction from its claws : and a thin plate of any membrane.	Muricate ; covered with spines or prickles.
Lanate ; woolly.	Nanus ; dwarfish : very small.
Lanceolate ; spear-shaped. Narrow, with both ends acute.	Napiformis ; resembling a turnip.
	Natant ; floating.
	Nemorosus ; growing in groves.
	Nectariferous ; bearing honey.
	Nictitans ; winking.
	Nictidus ; glossy, glistening.
	Nodding ; inclined to one side : partly drooping.
	Node ; a knot.
	Nudus ; naked.
	Ob, when a prefix, denotes the inversion of the usual position.
	Obtuse ; blunt and roundish.
	Officinalis ; such plants as are kept for sale, answering different purposes.
	Palate ; the prominence in the lower lip of a labiate corolla, closing, or nearly closing at the throat.
	Paleaceous ; chaffy.
	Palmate ; hand-shaped.

- Pulustris; growing in marshy places.
- Papilonaceous; butterfly-shaped: an irregular corolla, consisting of four pieces or petals; the uppermost is the banner, the lateral ones wings, and the lowest the keel.
- Pappus; the down of some seeds, as the Dandelion.
- Papillose; covered with protuberances.
- Pateus; spreading.
- Pectinate; like the teeth of a comb.
- Pedate; having a central leaf, or segment and two side ones, which are compound.
- Pedicel; a little stalk.
- Pellicle; a thin, membranous coat.
- Pellucid; transparent or limpid.
- Peltate; having the petiole attached to the under part of the leaf.
- Pendant; hanging down.
- Peregrinus; wandering; foreign.
- Perfoliate; having a stem running thro' a leaf.
- Perianth; a sort of calyx : surrounding the flower.
- Persistent; not falling off.
- Peristomium; the fringe or teeth around the mouth of the capsule of mosses under the lid.
- Personate; masked.
- Phrenogamous; such flowers as have stamens and pistils visible, in opposition to cryptogamous.
- Phylloid; resembling a leaf.
- Pilose; hairy, with a stiff pubescence.
- Phytology; the science which treats of the organization of vegetables.
- Plumose; feather-like.
- Premorse; bitten off: ending abruptly.
- Prasinus; green, like a leek.
- Pratensis; growing in the meadow land.
- Procumbent; lying on the ground.
- Proliferous; smaller flowers growing out of a centre flower.
- Pubescent; hairy, downy, or woolly.
- Pumilus; small, low.
- Punctate; dotted.
- Pyriform; pear-shaped.
- Quaternate; four together.
- Quinate; five together.
- Quinquaqid; five-cleft.
- Rachis; the common stalk, to which the
- florets and spiklets of grasses are attached. Sometimes applied to the midrib of leaves and fronds.
- Radiate; having ligulate florets placed like rays at the circumference of some compound flowers.
- Radical; growing immediately from the root.
- Rameus; proceeding from the branches.
- Ramose; branching.
- Reclined; bending over.
- Rectus; straight.
- Recurved; curved backwards.
- Reflexed; bent backwards.
- Repand; waving on the edge.
- Repeus; creeping.
- Resupinate; upside down.
- Reticulate; veins crossing each other, like net work.
- Retuse; having a slight notch in the end, less than marginate.
- Reversed; bent backwrad towards the base.
- Ringent; gaping, or grinning.
- Rostrate; wheel-form.
- Rotundus; round.
- Rugose; wrinkled.
- Runcinate; having large teeth pointed backwrad.
- Rupestris; growing among rocks.
- Sagittate; arrow-shaped.
- Samara; a seed vessel having a winged appendage, and not opening by valves.
- Saliferous; producing salt.
- Sarmentose; running on the ground.
- Scabous; rough.
- Scandeus; climbing.
- Semprevirens; living through the winter and retaining its leaves.
- Serrated; notched, like the teeth of a saw.
- Sessile; placed immediately on the stem without the intervention of a footstalk.
- Seta; a bristle.
- Siccus; dry.
- Sinuate; the margin hollowed out, resembling a bay.
- Spatulate; large, obtuse at the end gradually tapering to a stalk at the base.
- Spine; a sharp process growing from the wood.
- Squamose; scaly.
- Squarrose; ragged.

Stipe ; the stem of a fungus ; and also of seed clover.	posed to be designed for receiving and distributing air.
Stoloniferous ; putting forth scions or running shoots.	Tuber ; a solid, fleshy knob.
Striate ; marked with fine parallel lines.	Tunicale ; coated with surrounding layers, as in the onion.
Strictus ; stiff and straight.	Turgid ; swelled : inflated.
Strigose ; bristly.	Turbinate ; shaped like the top of a pear.
Suavis ; sweet, agreeable.	Uliginosus ; growing in damp places.
Suberose ; corky.	Umbilicate ; marked with a central depression.
Subulate ; awl-shaped ; narrow and sharp pointed.	Uncinate ; hooked.
Succulent ; juicy.	Unctuosus ; greasy : oily.
Sulcate ; furrowed.	Undulate , waving gently : rising and falling.
Superior : a calyx or corolla is superior when it proceeds from the upper part of the germ.	Unguis ; a claw.
Supinus ; face upwards.	Uniflorus ; one-flowered.
Suture ; line or seam formed by the junction of two valves of a seed vessel.	Unicus ; single.
Sylvestris ; growing in woods.	Unilateral ; growing on one side.
Tegens ; covering.	Urceolate ; pitcher-shaped.
Tendril ; a thread-like appendage of climbing plants, enabling them to ascend.	Utricle ; a little bladder.
Tenellus ; tender, fragile.	Valves ; the parts of a seed vessel into which it finally separates.
Terete ; round, cylindrical.	Ventricose ; swelled out.
Thorn ; a sharp process from the woody part of a plant.	Vernal ; appearing in the spring.
Tinctorius ; plants containing coloring matter.	Verrucose ; warty : covered with little protuberances.
Tomentose ; downy.	Vertical ; perpendicular.
Torose ; uneven.	Vesicular ; made up of cellular substances.
Trachea ; names given to vessels sup-	Vespertine ; flowers opening in the evening.
	Villose ; hairy : the hairs long and soft.
	Virescens ; inclining to green.
	Virgate ; long and slender.
	Virose ; nauseous : poisonous.

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